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ANTIQUITY

A Quarterly Review of Archaeology



Edited by O. G. S. Crawford, F.S.A.

and

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Antiquity

A Quarterly Review of Archaeology

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MARCH 1940

Editorial Notes

ONLY very rarely is a great Treasure kept intact through the Ages and eventually made known in such a happy way as was the case at Sutton Hoo, in Suffolk, last year. In this instance Fortune showed special discernment in choosing Mrs E. M. Pretty as the instrument through whom this remarkable revelation was made known. Now that the work has been carried through to a successful conclusion it is well to remember that she was the initiator and controller throughout.



It is not the first time in the history of British archaeology that knowledge has been signally advanced by the enterprise of an enlightened land-owner—far from it; indeed British archaeology has been largely built up on foundations so laid. Not always, however, was their enthusiasm well served or well directed; and never did it reap such a reward as this, the finest archaeological discovery ever made in Great Britain, perhaps in Europe. This country, indeed the whole world, owes a deep debt of gratitude to Mrs Pretty for the initiative without which this great discovery would never have been made, and for her public-spirited generosity in presenting the whole of the finds, intact and undivided, to the nation. The British Museum is unquestionably the proper home for such a remarkable treasure.

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Through the courtesy of Mr C. W. Phillips, who directed the excavations for Mrs Pretty, one of the Editors of ANTIQUITY (Mr O. G. S. Crawford) was present, together with his Ordnance Survey colleague Mr W. F. Grimes, during the week when most of the grave-goods were found. It was for both the experience of a life-time. In return both did what they could, by photography and technical methods, to assist the work.



The excavator, if he is properly trained, and has the necessary imagination, can get an intellectual thrill from discoveries that mean nothing to the man in the street. A few bits of human skull from a gravel-pit or cave enlarge for him the history of the human race; post-holes that Victorian excavators would never have seen at all become in his hands the farms and courts of prehistoric Britain. He does not for this need finds of great intrinsic or artistic value, but neither on the other hand does he despise them; and he is sufficiently human, usually, to enjoy a successful treasure-hunt as much as anyone, and perhaps to appreciate it more variously.



In the Saxon ship was buried, amid much else, gold and silver worth a fortune. But it was not mere useless bullion (like the bank reserves of modern states); it consisted of objects of great artistic value. As we watched emerging daily from the earth things that we saw were unique we felt that we were present at the unveiling of history, and that the history of our own country. There were great moments that none of us who were present will ever forget—such as the lifting of the silver plate, that for days had lain there half covering a silver basin (PLATE XVIII). We knew that exciting things were waiting for the uncovering—when the great moment came we were not disappointed (pages 69-70 and PLATE XIV).



The finding of the gold clasps was another wonderful moment. As always with gold objects, they were in perfect condition, without spot or tarnish. They are unique, and it was a happy chance they should be found on a day when we had visitors from the British Museum. The same evening there came, as a fitting climax to a crowded day, what was perhaps the most unexpected discovery of all. For some time we had been puzzled by a tantalizing patch of purple dust, sure

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harbinger of silver. It developed into a dome-shaped lump which Mr Grimes undercut and placed on a zinc tray. He deposited this on the grass outside the barrow and proceeded to take away the much corroded outer fragments. When at last he lifted the top we saw a bright silver bowl, base upwards, in perfect condition, and under this was yet another bowl. In all eight were thus uncovered, each with different ornamentation inside (PLATE XIX). That same day we removed the iron stand and silver tray, the iron-bound bucket, the gold clasps, and the sword.



Each day of that exciting week yielded some first-rate find, often of a type unknown before. As we worked along the keel we *knew* that under those mouldy-looking lumps of decayed wood lay hidden things of priceless historic and artistic value. We anticipated the finding of a sword, shield, helmet, and drinking-horns, and we were not disappointed. Things we did not expect were found—the purse, silver bowls and tray, for instance, and later the axe and suit of chain mail. It was clear that more would be found when the final examination in the laboratories of the British Museum was completed. Both the silver basin and one of the bronze hanging-bowls led to new discoveries ('Vicky', and the fish).



It is possible that there may yet be a few more finds when laboratory work can be resumed. For alas! within a few days of the conclusion of this stage of the excavations, the investigations were brought to an abrupt end by war. The whole of the finds had to be given first-aid treatment and then reinterred in a place of safety. Needless to say no anxiety need now be felt on their account, provided peace is declared during the present decade. But the preparation of any adequate report was rendered very difficult, and to that extent the accounts given in this number (and all work and study devoted to them so far) must be regarded as provisional. There was not time to take proper studio-photographs of the objects. The work will of course be resumed at the conclusion of the war, and we can only await that longed-for day with eager impatience.



The decision of the British Museum authorities to run no risks, and to leave all the finds undisturbed in their present repository, is

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obviously the right one. The iron objects will certainly keep without deterioration for a year or two; and the perishable ones (of wood, cloth, leather) have no doubt been duly sealed.



A few points of general interest may be touched on here. Whose grave was it? Professor Chadwick deals with this problem. Here it may be stated that, though the whole treasure obviously represents the funeral obsequies of a king, a body was not interred in the ship. Upon this view all who took part in the excavation (including the present writer) are agreed. Had it been otherwise, *some* remains, however decayed, would certainly have been found, and some purely personal articles. Soil-acids would not dissolve absolutely everything so as to leave no trace of a body; some dust or silhouette-mark in the sand (see ANTIQUITY VII, 468-71) would surely survive, and the teeth.



Then as to the date. The coins have not proved as helpful as we hoped. Their evidence is based, not upon the sure foundations of regnal years (except in fixing an upper limit of date), but upon the shifting evidence of style; and it must therefore be given no greater weight than the rest. For the survival of such a treasure we have to thank the deep burial in sand; it is this that has kept it safe from grave-robbers. We know that Dr Dee made an effort in this direction (p. 11), most fortunately without success. Indeed, given the collapsible nature of sand, it would not be possible to get at the treasure without first removing as huge a mass as was in fact removed by the present excavators. Any less heroic measures would merely have resulted in a cave-in.



It remains to thank those who have made possible the publication of the various accounts printed in this number, and first of all Mr C. W. Phillips for his on the actual excavation. Then we acknowledge with gratitude the kindness of Sir John Forsdyke, Director of the British Museum, and the Trustees, for allowing us the use of some blocks to illustrate a few of the most outstanding finds. Here we may note that in the December number of the *British Museum Quarterly* (which we strongly recommend our readers to purchase) nearly 30 pages, accompanied by 11 plates, are devoted to accounts of the Finds from Sutton

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Hoo. These and the various articles which we print supplement each other. A further account, giving full details of the excavation and of the ship, will be published in the *Antiquaries Journal*. Special thanks are due to Mr T. D. Kendrick, Keeper of the Department of the British Museum concerned, for his contributions, and for his help and kindness in many other ways.



In conclusion we have endeavoured to illustrate the accounts which follow by an adequate number of illustrations, for the occasion requires unusual treatment.



We must now refer to the large number of letters received recently from our subscribers, many of whom have written specially to express their pleasure that *ANTIQUITY* will still be published. They have been extraordinarily kind in other ways. Their faith in us has been shown by advance subscriptions for years yet to come, and of offers of practical help should such be needed. This is a great encouragement, and though future prospects are not too favourable we hope that we shall survive the difficulties which may have to be faced.



Subscriptions for 1940

Without hesitation we remind those who have not yet sent the annual subscription, and who do not pay it through their banks, that an early payment without further reminder will be doubly appreciated. It lessens correspondence, postages, and paper, all of which we are exhorted to save.

The Sutton Hoo Ship-Burial

I. THE EXCAVATION, by C. W. PHILLIPS

UNTIL the year 1939 the archaeology of Britain in Anglo-Saxon times has had to concern itself little with ship-burials and to no great extent with rich burials of any kind. If we omit those in the county of Kent and a few important burials at Taplow, Broomfield, and elsewhere, the archaeology of Anglo-Saxon graves in general presents few striking features besides its almost universal poverty.

Although ship-burial in various forms had been a feature of northern archaeology for centuries, there was little evidence that the custom had crossed the North Sea with the invading Anglo-Saxons to any important extent. The only hint that it had made this passage was found in the discovery at Snape Common, near Aldeburgh, Suffolk in 1862.¹ Here in an Anglo-Saxon barrow group, containing many inurned cremations, was found a buried boat 48 feet long with a beam of 10 feet and a depth of 4 feet. It appears to have been clinker-built with seven strakes, keel-less, and propelled by oars. The hull was held together by iron clench-nails. Some traces of a burial, possibly by cremation, were found along the keel-line of the boat, and from this two green glass goblets, a piece of a bronze bowl, some hair (animal fur?), and a late Roman gold ring with onyx intaglio survive. All the relics but the ring are now in Aldeburgh Museum, and with them are pieces of a burnt human mandible. This appears to be all the evidence for a cremation there is, and as the excavator says that no bones were found this may be a stray from one of the adjacent cremations.

The boat had a rounded stern and was comparatively beamy, features distinguishing it sharply from the Nydam ship, the prototype of Anglo-Saxon craft.

Apart from this all the ship-burial remains found in these islands have belonged to the Viking Age and have been rifled long before discovery, besides being, in all probability, of no particular quality in their time. Nothing can be more certain than the use of great numbers of boats of the Nydam type by the Anglo-Saxons in the many phases of their occupation of England in the fifth and sixth centuries.

Already before the collapse of the Roman province they must have been familiar to the dwellers on our east coast, and after the conquest

¹ *Notes of Jottings about Aldeburgh, Suffolk*, by Nicholas Fenwick Hele. London, J. R. Smith, 36 Soho Square, 1870. *Victoria County History of Suffolk*, I, 326-28.

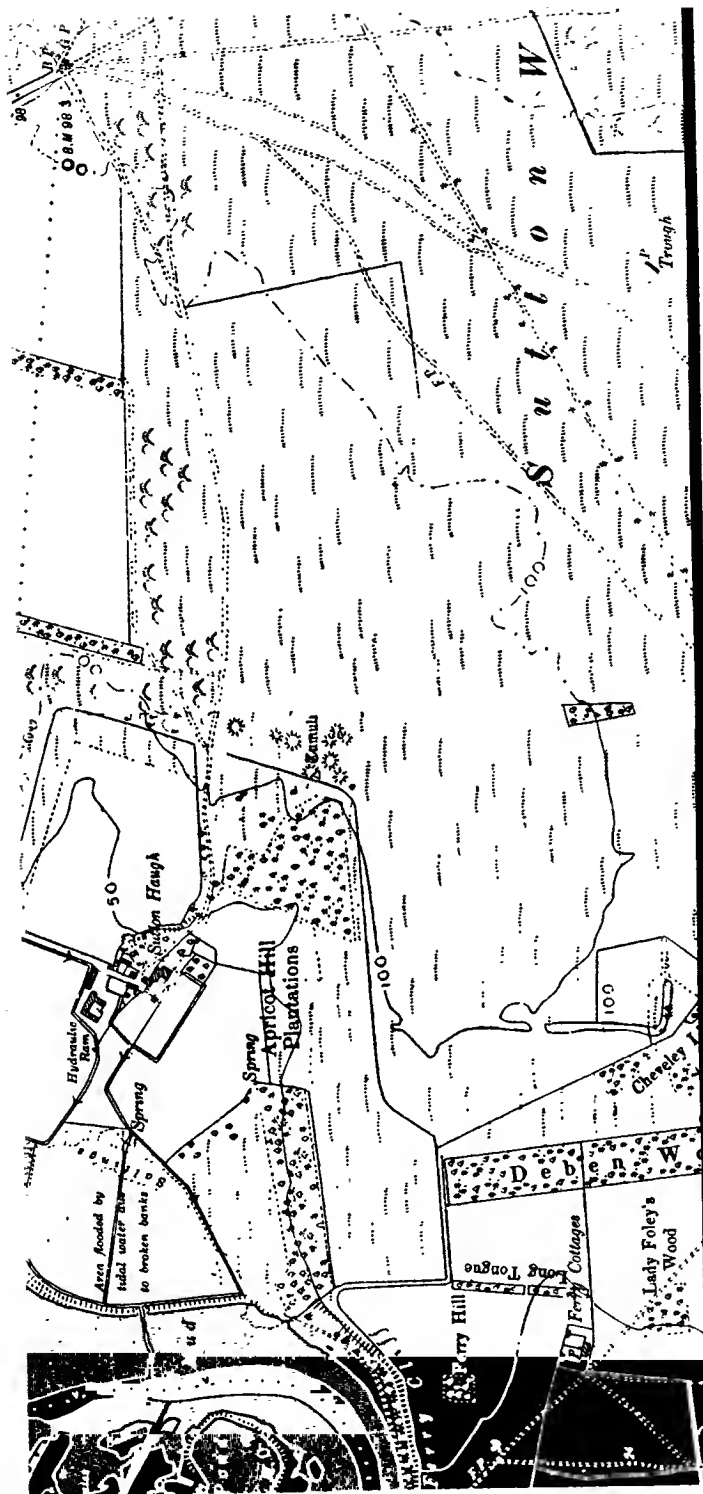


FIG. 1. THE SITE OF THE SHIP-BURIAL IS SHOWN BY THE ORDNANCE SYMBOL IMMEDIATELY BEFORE THE LETTER T OF "TUNULI". (From O.S. 6 in. Suffolk 77 nw and 76 we). SUTTON HOO IS 9 MILES ENE OF IPSWICH
Reproduced from the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office

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was complete they became the standard vessel for water transport. Nothing in the history of the Anglo-Saxons after the first century of conquest suggests to us that the Nydam boats were much used for war-like purposes ; but kings and nobles of the coast-wise countries might be expected to possess fine examples of these craft as part of their normal equipment. Under these conditions it would not be surprising if, while the Saxons were still pagan, these craft, so supremely identified with the grandeur of their owners, became the means of their transport to another life after death. Barrow-burial might be expected inland, but ships were likely last resting places for the leaders of the coastal Saxons.

It was in the summer of 1938 that Mrs E. M. Pretty, J.P., of Sutton Hoo, decided to investigate the contents of certain mounds on her estate at Woodbridge. These form a close-set group, eleven in number, placed on the western edge of the extensive heath which occupies most of the country between Woodbridge and the open sea six miles distant. The place is at the head of the estuary of the river Deben, a stretch of tidal water some nine miles long running south-eastwards from Woodbridge to enter the sea at Bawdsey. This is one of the many considerable inlets on the coast of East Anglia and would obviously be a useful harbour in the days of small boats. At Woodbridge the estuary is about 250 yards wide at high tide, and its eastern side is overlooked by a fairly steep escarpment some 100 feet high at the edge of which the heath begins. Thus the barrow-group overlooked the water. It is a point of some interest that Bede names Rendlesham as the site of a palace of the East Anglian royal house, and this is only four miles away to the northeast.

The heath is composed of a gravelly sand, somewhat humified at the surface where a sparse turf competes with lichens and bracken. It contains a few rolled nodules of clay but is otherwise pure.

In the summer of 1938, assisted by Mr Guy Maynard, Director of the Ipswich Museum, and Mr Basil Brown, Mrs Pretty opened three of the lesser barrows in the group. We are not concerned in detail with the contents of these, all of which appear to have been more or less disturbed ; but the remains of a boat some 18 feet long with a square iron-bound stern were found in one, and the others contained cremation burials with associated objects belonging to the sixth and seventh centuries. The finds were removed to Ipswich Museum where they may now be seen. The barrow nearest the edge of the escarpment was much larger than any of the others, and it was known that its western

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end had been partly removed by ploughing and other means in comparatively recent times. Its original form thus appears to have been an elongated oval in plan with a length of more than 100 feet, a breadth of 75 feet, and a height of 10 feet.

In May 1939 Mrs Pretty decided to examine the contents of the barrow. Mr Basil Brown was placed in charge of the work in the field under the general supervision of Mr Maynard. Starting at the east end the former early encountered a system of iron objects in the sand which he was able to recognize from his experience of the previous year as the clench-nails belonging to the end of a boat protruding from the old ground-surface level. Working with commendable care and skill he progressed steadily until he had cleared the greater part of what later proved to be the forepart of the ship. At this stage it was recognized that the discovery was one of great importance and a consultation was held with the Office of Works and the British Museum, as a result of which the writer was asked to supervise the work on behalf of the Office. The Science Museum was also informed of the find, and it was arranged that Lieut.-Commander J. K. D. Hutchison should make a study of the ship, which he did in the later stages of the excavation.

During the most critical parts of the work the writer had the advantage of the help of Mr W. F. Grimes and of Mr and Mrs Stuart Piggott, which he gratefully acknowledges. Mr O. G. S. Crawford was also a witness of the main discovery and made a photographic record of great value. At a later stage Miss B. Wagstaff and Miss M. K. Lack took many important photographs of the excavation of the ship, and the excavators were much helped by Mr W. E. Robins, who made a number of important drawings as well as recording the scene in oils and dry-point. To all of these the hearty thanks of the excavators are due.

THE PHYSICAL CONDITIONS OF THE EXCAVATION

For all practical purposes no other material but sand was to be found on the site either in the composition of the soil or in the barrow. It was early seen that the whole of the mound overlying the ship was built of turf which had been stripped from the surface of the heath. This turf had mouldered into a mass of dark sand, and under favourable conditions of light it was possible to see the faint outline of individual turves in the sides of the section cut through the mound. Dr F. E. Zeuner confirmed the turf diagnosis, and established the point that the vegetation of the heath at the time of the burial was the same as at the present day.

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It was soon apparent that the whole of the ship with the exception of its two uprising ends had been buried below the old ground surface. This fact, associated with the very perishable indications of the form of the ship, the friable nature of the soil, the depth of the excavation necessary to reach the ship's keel, and the impracticability of doing much to cover the work from the weather, made a very wide trench with terraced sides reinforced by timber necessary. In spite of days of heavy rain when nothing could be done to prevent the sand from slipping these measures were entirely successful, as the photographs witness.

Since the whole of the ship and its contents had been involved in sand for some 1300 years, it is not surprising that there were virtually no remains of wood except for small fragments which were found here and there preserving their form if not their character through contact with rusted iron. This also made it practically certain that no organic remains would be found except for those which might have had the good fortune to encounter the necessary chemical conditions for their preservation among the objects placed in the burial. Traces of the existence of wood could frequently be seen in the form of thin layers of discoloured sand, associated with bands of more or less of the same material leached white by the action of the acids liberated in the decay of the wood. The normal colour of the sand on the site was yellow, except where it was the product of the decay of turf or had been under decaying wood. Efforts were made to interpret these patches of leached sand, but it was soon clear that none but the vaguest ideas could be formed of the size and shape of the wood whose decay had produced them.

Under normal conditions of weather it appears that the sand is thoroughly damp here quite near the surface, so that the whole of the ship and burial deposit has always been wet.

No difficulty was found in distinguishing the filling of the trench from the undisturbed sand even when the colour was the same in each case. The filling dropped away easily from the sides of the trench and following it was merely mechanical.

The whole of the area occupied by the barrow group had been the scene of casual settlement by folk in Early Bronze Age times. The chief evidence for this, apart from surface finds, was the occurrence of a few hearths here and there about a foot below the old ground-surface. In digging their trench the Saxons had disturbed some of these with the result that bits of beaker and a piece of rusticated ware turned up in

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different parts of the ship, some even as low as the keel-line. These had been thrown in with the filling.

A determined attempt had been made in the sixteenth century to rob the grave. Traces of a large excavation were found in the barrow directly over the eastern half of the burial-chamber. It had been carried down to old ground level and remains of a fire and a broken Bellarmine pot found in the bottom of the hole suggest that we have here vestiges of the attempt to open the barrow, which may have been made by Dr John Dee, the Elizabethan alchemist.

THE MODE OF THE BURIAL

As the ship was 85 feet in length the problem of its transport and its placing in the ground was a serious one. The barrow-site is about half a mile from the present course of the river, and 100 feet above it. It is possible that in Saxon times the water came nearer to the foot of the escarpment before the mud flats were embanked, but this would not greatly reduce the distance. The barrow stands between the heads of two small coombes which converge lower down towards the bottom of the wood. It is slightly nearer to the more westerly of the two, but the top of this is much too steep, and the other was almost certainly the route adopted. Here the gradient averages about 1 in 20, steepening a little towards the top, but this is compensated for by the much greater width of this little valley. Presumably the boat was brought up on rollers, possibly by animal, or perhaps by human traction. No light can be thrown on this question, but it may be pointed out that, although bulky, the ship was relatively light for its size. We may be sure that the men who built such ships were well used to moving them about on land.

The trench was very little wider than the ship itself and at the stern end fitted closely round it. This suggested that the ship had probably been drawn stern first down a ramp to the level of the bottom of the trench and then hauled along near to the closed end. When the trench was examined at the bow end it was found to be closed there also so it follows that the ship was lowered into the grave coffin-wise. It was noticed that a thin layer of yellow sand from the digging of the trench underlay the barrow on each side. When the trench was dug the spoil was probably carried clear away from it, leaving the sides free. This thin layer may be explained as the spill from its removal. Later the main mass of the spoil was filled into the fore and after parts of the ship. The disposal of the surplus excluded by the presence of the burial-chamber was not determined, but it was probably added to the barrow.

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Thus when the time came to bury the ship there were no dumps along the sides of the trench. It may be suggested that long poles were placed across it in sufficient numbers to support the ship, which was then run out on to them. A series of strong wooden bollards may have been driven into the ground well back from each side of the trench. Cables were passed under the ship and their ends secured round the bollards. After the cables had been tightened to take the weight of the ship, and the poles had been removed, it was lowered steadily into the trench by paying off the cables from the bollards. No evidence directly supporting this theory was found, but the fact remains that the ship was successfully lowered into the trench and came to rest on an even keel with only a slight lean to starboard. It may be suspected that at least some members of the burial party had dealt before with similar problems.

THE BURIAL-CHAMBER

This structure was placed amidships and measured $17\frac{1}{2}$ feet in length. It had entirely collapsed, but a number of indications survived showing what its character had been. The two ends stood at right angles across the ship and rose to a gable-ended roof, the ridge of which seems to have been some 12 feet above the keel-level. The eaves came down to the gunwales on each side, resting just inside them. Some considerable pieces of the lower edge of the roof on the starboard side remained in position after the collapse of the chamber as a whole. The traces of these could be easily seen and gave an idea of the slope of the roof and also of its relation to the gunwale. The chamber was not an original part of the ship and was constructed of oak boards, probably quite roughly fashioned. Judging from the fallen pieces on the floor it seems that the roof was made of two layers of boards, one running from end to end of the chamber parallel with the ridge, and the other going from gunwale to ridge at right angles. It is also fairly certain that the ridge was finished off with a thick layer of turf. On or just above the site of the ridge a curious object was found, an oval basin of clay 3 feet long and seemingly built up in layers (PLATE I). This had sunk down when the roof gave way but had not been broken. It was not fired and contained nothing to show its purpose. Its position above the burial chamber a little west of the middle suggests that it may have been used to receive libations when the grave was being closed. The writer knows of no parallel to this in other ship-burials.

The ends of the chamber were made of boards, but whether set

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horizontally or vertically is uncertain. Appearances suggested a horizontal setting but the preservation was very bad. A few vertically set iron spikes occurred along the bases of the walls.

A doubtful point was whether the chamber had a floor other than the bottom of the boat. As this was fairly flat none was particularly necessary. A system of iron cleats occurred, disposed on each side of the main deposit through the greater part of the length of the chamber and was not found outside its limits. These cleats, although they lay on the bottom of the boat, were not secured to it in any way though in a number of instances they seemed to be curved to accommodate themselves to it. Here and there it appeared that the bottom of the boat may have been strewn with bracken, for there were traces of some decayed vegetable bedding of this kind.

The burial chamber had not been disturbed by robbers and remained inviolate until it collapsed through decay. Once this had happened the business of robbing the grave became formidable. Many feet of sand would have to be dug through, and the hole would have to be timbered up extensively for any success to be achieved, even if it was realized that the deposit was deep below the old ground surface, which is improbable.

The construction of the chamber must have been substantial, for the collapse can hardly have taken place for many years after the burial. This assertion depends on the condition of many of the iron objects in the grave when the fall took place. The helmet and the sword were both broken into many pieces, and the chain mail had already become glassy in consistency and was shattered. This suggests a very advanced stage of decay which would take a long time to develop.

With the chamber in place the boat must have looked very much like the traditional Noah's Ark of the nursery.

CONTENTS OF THE BURIAL-CHAMBER

In describing the position of the objects found a convention will be adopted based on the points of the compass. Although the ship did not lay directly east and west it came so near to doing so that the terms north, south, east, and west may be taken as meaning port-side, starboard side, towards the bow, and towards the stern respectively.

As found, the objects in the burial group rested either directly or very nearly so on the bottom of the ship. They were disposed in the form of a large letter H with cross-bar of exaggerated length. The two uprights stretched across the ship just inside the end walls of the

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chamber, and the cross-bar joined them along the keel-line. With only one exception, the remains of an iron-bound wooden bucket, all the grave-goods were closely confined to this arrangement. The centre of interest for those preparing the burial was at the west end, where a considerable number of magnificent objects connected with the arms and personal equipment of the dead man were placed. The keel-line deposit was also chiefly composed of similar objects, while the deposit across the east end of the area was made up of large bronze cauldrons and other domestic vessels and their tackle.

The main discoveries were made in the last week of July and it was a fortnight before they had all been lodged in the British Museum. By that time international affairs were once more becoming critical and before any proper examination of many of the finds could be made they had to be packed away into places of safety. No attempt was made on the spot to empty the various receptacles found, this work being done in the British Museum. We thus have no more than a general knowledge of the finds and more leisured examination will certainly yield many new features as well as further objects. The account which follows is for these reasons no more than provisional.

We will begin our more detailed description from the west end. Immediately at the foot of the inner side of the chamber wall lay a long iron object in the form of a bar with its lower end pointed like a railing spike. The top end carried an equal-armed cross at right angles to the bar, each of the four ends of the cross having a decoration in the form of the head and horns of a bull (?). Eleven inches from this feature the bar passed through a square iron frame, also at right angles to it. The four corners of this were decorated with more bulls' heads, and the frame was filled in with a system of iron bars parallel to its edges on all four sides. Signs were not wanting that the frame had been supported by stays which passed from the undersides of the corners down to the bar some 1 foot 3 inches below, but this part of the object was badly preserved. It is supposed that it was some kind of portable flambeau which could be stuck in the ground wherever wanted (PLATE II).

Close to it lay the collapsed remains of an iron-bound wooden bucket and at the south end there was an interesting complex made up of a bronze bowl (PLATE XII) with drop-handles containing a bronze hanging bowl of slightly smaller dimensions. Through one of the drop-handles of the outer bowl the shafts of three iron angons had been thrust, and with them lay four other iron socketed spear-heads which

THE SUTTON HOO SHIP-BURIAL

had associated iron ferules some seven feet to the east, showing that they had been put into the grave mounted on their shafts. The bronze bowl was a degenerate copy of the well-known 'Coptic' bowls of Anglo-Saxon archaeology, and the contained hanging-bowl was one of the finest of its type so far found in Britain. It had suffered a fair amount of corrosion, but its decorative features were in good condition. These consisted of three large round escutcheons holding the hooks for hanging the bowl, three functionless rectangular escutcheons occupying the spaces between the round ones, and the normal embossed decoration in the base of the bowl. All the escutcheons were enriched with the finest millefiore glass work and scroll designs. In this bowl were found the remains of a small five-stringed musical instrument and a bronze fish fixed to a bronze stem set up on the bottom of the bowl. The type and purpose of the instrument are obscure, but it may be suggested that it was used by a bard to emphasize the points of his song rather than as a real solo instrument. (See *ANTIQUITY*, VIII, 93-4).

Close to the iron stand and roughly parallel to it was a remarkable whetstone (PLATE III) 1 foot 9 inches long. It is square in section, tapering towards each end. The ends, which were painted red, have been carved into melon-like terminals originally enclosed by a number of bronze clasps supporting two shallow bowl-like features, also of bronze, the purpose of which is not clear. Each end of the stone is further decorated by four human heads carved in low relief, one on each face of the stone. The heads are mostly bearded and are executed with much skill and delicacy. The whetstone shows little sign of use although its material is admirably adapted for sharpening, and it was probably a formal object, its massive character reflecting the greatness and power of its owner.

Close to the whetstone on the east was a great bronze shield-boss (PLATE XV) and several associated mounts of bronze which had fallen from the decayed wood of the shield. The boss is a remarkable object of great size and weight. It has a domed form with a large circular escutcheon at the point. The decoration of this last has not yet been examined, but the surface of the boss is covered with an elaborate interlaced decoration which will probably be found to have suffered little when cleaned. Some traces suggest that it may have been enriched with gold leaf. The rim of the boss carries five large symmetrically disposed domed studs, and the whole is strongly reminiscent of the Vendel shield bosses. The mounts have not yet been examined but they appear to consist of at least two round gilt smaller bosses and two

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different elaborate zoomorphic bronze castings much enriched with gold leaf. Some doubt exists whether the remains of a small decorated wooden box may not be mixed up with this. The iron hand-grip of the shield was in bad condition. Overlying the shield remains were the hopelessly decayed traces of a large thin wooden object, apparently subrectangular in plan and not less than 1 foot by 9 inches in area. Such wood as survived had a silky texture and the edge was beaded with gold leaf on a moulding of gesso. At set intervals there were projections from this edge into the field of the object, consisting of flat animal heads of gesso covered with gold leaf and fitted with eyes made of discs of garnet. The eastern part of this was completely wanting. Its purpose is unknown and it does not seem to have been stout enough for a gaming-board.

East of the collapsed wooden bucket and the bronze bowl-spear complex a slight amorphous hummock showed by its purple stain that silver was present. Upon excavation this proved to have been a nest of nine shallow silver bowls placed upside down (PLATES XIII, XIX). Two long-handled silver spoons (p. 53) were placed with the bowls beneath them and the handles sticking out eastwards. When the roof of the chamber fell the topmost bowl had been thrown off the pile and had been reduced to mere silver chloride at the time of the excavation. The topmost bowl of the eight was also in bad condition, but the remaining seven were very little affected and were for the most part as bright as on the day of their deposit in the grave. The two spoons were also in very fair condition.

We now come to the area where the body may be supposed to have lain had the burial been by inhumation. The seven feet of keel-line region east of the iron stand proved to be very rich in precious objects. To the south of the line lay a sheathed sword broken by the fall of the roof, to the north were the crushed remains of a remarkable helmet, and across the keel-line between the two were wonderful objects connected with the dead man's harness. These can only be described very generally here.

The outstanding objects were a pair of large gold clasps (PLATES IX, XX), richly decorated with cloisonné work and filigree, possibly from the shoulders of a leather cuirass (?), a massive gold buckle with broken interlace decoration picked out in niello (PLATE X, a), the gold frame of a purse (PLATE XI) with seven gold cloisonné plaques formerly sewn to its outer face, 40 gold Merovingian coins, two small ingots of gold contained in the purse, and a lesser gold buckle of fine design.

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Besides these there were a number of rectangular gold plaques enriched with garnet cloisonné work, a jointed T-piece, a rich strap-end, and several lesser pieces of similar materials and workmanship. It is an interesting point that with almost the sole exception of the great buckle all these objects lay face downwards and may be presumed to have shifted slightly from their original place of deposit. Perhaps they were hung up and later fell.

The sword has a gold cloisonné pommel and the hilt was enriched by gold filigree work, while on the sheath were two gold hemispherical bosses of garnet cloisonné work (PLATE IX). The sheath was badly decayed; a white incrustation which has yet to be examined suggests that it may have been plated with ivory. The chape region was wrapped round with cloth, which may once have covered much of the weapon. Disposed on each side of the sheath by the hemispherical bosses were two exquisite pyramidal objects of gold cloisonné work which had presumably decorated the ends of a sword knot (PLATE IX). They belong to a type already known and more than once associated with swords. The whole group constitutes the most splendid collection of Anglo-Saxon jewellery ever found, and its more detailed consideration comes from Mr T.D. Kendrick elsewhere in these pages.

Parallel with, and to the south of the sword, was a much-decayed iron blade suggesting a scramasax, but without that weapon's distinctive features.

The helmet appears to have been completely smashed when the roof fell in and it is impossible to give any reliable idea of its appearance, but certain remarkable facts show that, when reconstructed, it will be one of the finest in the ancient Teutonic world. The headpiece was made of iron, which appears to have been enriched with gold and silver. There are signs of elaborate interlace decoration and there appear to have been ear-guards with silver beaded edges hanging on each side. The crest of the helmet was outlined with bronze zoomorphic fittings reminiscent of the elongated animal-heads found on the Vendel helmets, and a small bronze figure of an antlered stag mounted on a ring of iron found some three feet to the west of the main helmet ruin, may have been placed on the apex. The face-piece consisted chiefly of a remarkable bronze casting representing a nose, mouth, and moustache in one piece. This was in excellent condition.

Passing eastwards along the keel-line deposit a curious mass of starfish-like objects (PLATE IV) in badly corroded silver was next encountered. When two very rotten horns with silver mounts had been

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found it was seen that the whole mass was the remains of similar horns hopelessly crushed and decayed. They were removed *en bloc* to the British Museum, where it has been found possible to copy the design (see p. 73) on the mounts. They are Anglo-Saxon work of indifferent design. There were plentiful remains of rotted textile here, and no doubt all the horns were once wrapped in cloth. Some way up the side of the boat, on the south side of the horn complex, were found the remains of an iron-bound wooden bucket in an advanced state of decay. This had been decorated with rectangular and circular bronze escutcheons, several of which appeared to show signs of much-decayed enamel.

Directly east of the horn complex came a great circular silver dish (PLATES XVIII) 28 inches in diameter. It has a heavy foot-ring two inches deep, and was placed on the top of a pile of miscellaneous objects into which it had been forced by the impact of the falling roof, while its edges had been bent over partially sealing down everything underneath. Stamps on its underside belong to the Byzantine Emperor Anastasius I, A.D. 491-518 (PLATE X, D, E). Under its western half was a smaller silver dish, also circular, gadrooned and decorated with a stiffly-executed female head of classical type embossed in the centre (PLATE XIV). In this were the remains of at least six small globular bottles with gilt bronze rims, apparently made from gourds. At least two were in fair condition. There was also a small plain silver vessel like a finger bowl with a foot-ring, and the remains of two combs. Pinched on to the foot-ring of the great dish by the impact of the falling roof was a small parcel-gilt silver dipper like a punch ladle with a short ringed handle. The greater part of the area under the big dish was occupied by a mass of rotted cloth (PLATE V) showing several different weaves and a fringe, two bundles of leather, at least one of which was a pair of shoes, and a lot of flock-like material, probably the stuffing of a small pillow. Directly under the foot-ring of the great dish was a small bronze hanging-bowl face downwards. It was in poor condition and had apparently been already damaged at the time of its deposit, for a leather lace was in position under the cavetto of its rim to hold it together, and it appeared that other laces had been used to suspend it. When the smaller silver dish was raised it was found to have been forced down into a large leather bag (PLATE XXI) fitted with two silver drop-handles attached by silver escutcheons of circular form. Its general form was that of a shopping bag, and the leather appeared to be of good quality with a grain like coarse morocco. A small bronze buckle and slider were attached to a thin strap which was probably used to give extra support to the bag when full.

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Among the mass of textiles and leather already mentioned there were signs of another leather bag in a much worse state of preservation, and a small silver mount found probably belonged to it. When the textiles were lifted another bronze hanging-bowl was seen, also face downwards, and in a bad state of preservation. After all had been cleared it was found that an iron axe with handle two feet long lay under the southern edge of the great dish. It was made entirely of iron both in head and handle, but much corroded. Under the smaller silver dish and leather bag was a rusted mass which proved to be chain mail, already far gone in corrosion, apparently at the time of the fall of the roof, and so broken into lumps, but with the design of the work clearly recognizable.

Under all and resting on the bottom of the ship were traces of what was probably a large oval wooden trough carved from the trunk of a tree (PLATE XXIV).

Clear of the great dish and a few inches south of it lay a wheel-made pottery bottle of Jutish type, with a black internal stain, badly crushed, but quite capable of restoration.

A little east of this were some lumps of a black material, with a conchoidal fracture like pitch, which on analysis by Dr. Zeuner proved to be manganese oxide, possibly used as a base for making paint.

All across the east end of the chamber, reading from north to south, lay a mass of large collapsed vessels comprising the remains of a large wooden tub with iron reinforcements and handles, a large bronze cauldron with iron ring handles (PLATE XVI), a medium-sized bronze cauldron, and a smaller one. The large cauldron was badly folded up by pressure though it should be capable of reconstruction; but the two smaller ones were smashed to atoms and their only tolerably intact parts were the rims, which had been turned outwards over a reinforcement of thick twisted iron wire.

Just west of the wooden tub and large cauldron was a mass of ornamental iron chain-work, probably tackle for hanging the vessels over the fire. On the ruins of the great cauldron lay three fair-sized oak pegs, pointed at each end and resembling the wooden 'cats' in the game of Tip-cat. Two were in very fair preservation and their condition contrasted strongly with the almost complete disappearance of all other wood. Their purpose is unknown. They may be some rough materials left about by the builders of the chamber, for a careful examination of a few wood scraps found showed that some of them

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were sawn-off ends produced in trimming up the boards. Their remarkable condition may be due to their closeness to much bronze.

Between the medium-sized cauldron and the great silver dish was a curious, much corroded, iron object like a cup on a short stand with three or four feet. The outside of the cup was reinforced by four iron bands and the inside divided up into segments radiating from the centre by a number of thin iron partitions. The spaces between these were filled with a whitish concretion. This was probably a lamp, and has many points of similarity with the iron lamp found in the comparable but much poorer Saxon grave at Broomfield in Essex.

This completes the tale of objects found in the grave as far as can be known at this stage. Several remarkable facts emerge from a consideration of their arrangement. The main one is the total absence of any human or animal remains. No sign of cremated bone was seen, and not even a tooth rewarded a close search. It seems safe to say that cremation was not the rite practised at Sutton Hoo, for in that case the burnt bones might be expected to be placed in one of the various rich receptacles found in the grave. Even if not inurned the well-known resistant qualities of burnt bone should have ensured the survival of enough fragments to make out a case for cremation. Sand is a notorious consumer of organic remains ; but if the bodies of horses had been included in the deposit, dense and resistant object like horses' teeth should have been found if no bones had survived. It may be suggested by some that the body of the dead man was placed along the keel-line at the west end of the chamber among the many rich objects deposited there. There can be no doubt that the burial party regarded this part of the chamber as being the most important, but the awkward fact persists that no single object was found which might have been personal to the dead man. There was no ring and no pendant, nor were there any of the small metallic objects which might be expected to survive the decay of the clothes on a body. Again, the arrangements of the rich objects in the neighbourhood of the sword does not suggest that they were actually put into their proper places on an actual body, but rather that they were laid down formally in a general relationship to a purely fictitious corpse. In other words the whole grave may be a cenotaph erected to a great man whose body was irrecoverable for burial, possibly lost at sea. It is an interesting point that in the Broomfield grave there was no sign of a body, and a reading of the report in which the excavators suggest that a number of traces of carbon and soot

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implied a cremation leads to the suspicion that traces of decayed wood-work were mistaken for those of fire. Much at Sutton Hoo which was certainly the last vestiges of wood naturally decayed in the sand would have appeared as soot and fire charcoal to the inexperienced.

Against all this we must recall that the burial in the Snape boat may have been a cremation, and that here a fine late Roman gold finger-ring was found. Also in two of the smaller Sutton Hoo barrows opened in 1938 cremations were found; but the Sutton Hoo ship-burial contained no trace of a cremation, and in the absence of obvious features of an inhumation we are compelled to fall back on the cenotaph theory.

THE SHIP (PLATES VI-VIII)

The following remarks about the ship are of a provisional nature only. Lieut.-Commander J. K. D. Hutchison was in charge of this part of the excavation and resumed service with the Royal Navy upon the outbreak of war. He has thus had no opportunity of dealing with the ship, but we hope that it will be his task to give an authoritative account of the boat at a later time. Meanwhile, with his consent, the writer is attempting a layman's account of this technical matter so that some broad facts about the boat may be known without delay.

The Sutton Hoo ship is a great open rowing boat 80 feet long as traced in the ground, and probably 85 feet overall when both bow and stern were complete. Its greatest beam is 14 feet and its depth 4 feet, its prow rising to a probable height of $12\frac{1}{2}$ feet above the level of the keel-plank amidships. It is clinker-built without permanent decking and carrying no mast or other arrangements for sailing. The hull is stiffened with 26 ribs and the boat was propelled by 38 rowers. In the early stages of the excavation it was confidently expected that the burial would prove to be of Viking Age, but as the work progressed certain features made this less likely, until it became quite clear from its construction, apart from the age of the articles in the burial deposit, that the ship belonged to the pagan Anglo-Saxons. The first clue to this was the number of the strakes. While the burial-deposit was in the ground it was not possible to make the examination of the keel which would clear up many doubtful points, but it was plain that the ship had no more than nine strakes including the gunwale, a number barely half that found in ships of the Gokstad and Oseberg type. Further, the strakes were broad and there were no signs of mast supports and other sailing tackle amidships. It was improbable that these had

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been removed and they were not removed in the Viking-ship burials even though their bulky presence complicated the placing of the funeral deposit.

At an early stage, therefore, the excavators were compelled to look to the Nydam ship, now preserved in the Kiel Museum, for a prototype.² This famous vessel was found with two others in the Nydam bog in Schleswig in August 1863. It was the main feature of a great votive deposit of vessels and arms and was in a very fair state of preservation. It has since been magnificently reconditioned and displayed in the Kiel Museum.

The Nydam boat may be confidently dated to the close of the fourth century A.D. The main features of its construction are that it is a large keel-less open rowing boat $73\frac{3}{4}$ feet long with a beam of 10 feet, and a depth of 3.7 feet. It has six strakes from keel-plank to gunwale made of single oak planks from bow to stern in every instance except the gunwales, which have been pierced at the forward ends. This involved cutting out planks averaging 14 inches broad and 1 inch thick with lengths equal to that of the ship, besides working out a series of cleats on their inner sides from the solid wood to which the ribs were lashed. The boat's hull was clinker-built, the fastening being iron nails. The stem and stern posts were joined to the keel-plank by treenailed scarves, and the strakes were nailed to them in grooves cut down the edges of the posts to receive their ends. The whole hull of the boat, leaving aside the internal framework, consisted of no more than 17 pieces of wood, including the shorter pieces used to eke out the gunwales forward.

Internally the hull was braced by 19 ribs made of grown pieces of wood running from gunwale to gunwale and attached closely to the strakes by lashings passing through the two cleats left standing on the inner side of each strake. These ribs were spanned by thwarts resting on the heavy gunwale cleats supporting the rib ends and further held up by three, two, or one vertical stanchions depending for their number on their position in the ship. The thwarts had rowers' seats fixed to them, and lashed to the gunwales were 30 thole-pins, 15 a side. They have a very distinctive claw-like form and were made from natural forks of timber.

The boat was steered by a broad, specially adapted oar, worked by a tiller over the starboard side at the stern and it is probable that there

² H. Shetelig and Fr. Johannessen, *Acta Archaeologica*, 1930, I, 1-30.

Conrad Engelhard, *Nydam Mosefund*, 1859-63. Copenhagen, 1865. *Denmark in the Early Iron Age*. London, 1866.

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was a small platform set in the stern for the steersman ; otherwise the ship does not appear to have contained anything except possible bottom boards, oars, baling scoops, and a quantity of stone ballast which, it is thought, was kept from shifting by a compartmented arrangement of wicker-work on the bottom. Although only a few stones were found at the time of the excavation it is plain that the ship would have been almost unmanageable without ballast, probably at least one ton in weight, for although the Nydam ship is a most impressive piece of craftsmanship, its narrow sharp lines and absence of grip on the water must have made it an unstable vessel.

However this may be, it is certain that it was in fleets of boats of this general type that the Anglo-Saxon invaders reached the shores of Britain, and for this reason it was likely to be a prototype of many of the boats which they built when fully established in their new home. This question is one which must be treated with caution, for it would be wrong to suppose that at the time of the Anglo-Saxon invasions there were no sailing ships in the North. When dealing with boats used for burials we are concerned with aristocratic craft, probably used almost exclusively for war, always making the important exception of the Oseberg ship which was a queen's state barge. It would be rash to assume that these burial craft told the whole story of the ship-building of their time, and a discovery like that of the wrecked boat at Galtabäck on the west coast of Sweden comes to remind us that there was an extensive class of cargo boats as well.³ This vessel has been dated on pollen analytical grounds to the fourth and fifth centuries, which makes it more or less the contemporary of the Nydam boat. It differs from the latter in several ways : by being arranged for sailing ; by having a more composite construction ; and by having a keel. Many of these features of the Galtabäck boat are in an early stage of development, but they mark a great technical advance on the Nydam ship. It is also worth recalling that the account of the ship-burial in *Beowulf*, lines 26 to 52, tells us that the ship was fitted with a mast. In this case the burial was accomplished by setting the ship adrift, so that the use of a sailing ship, if one was to be had, is not surprising.

The Anglo-Saxons must also have come upon a certain number of boats belonging to the Romano-Britons, some of which are likely to have been sailing craft with a Mediterranean ancestry.

³ *Galtabäcksbåten och dess Restaurering*, by N. Niklasson and Fr. Johannessen. Goteborg Museum, 1933.

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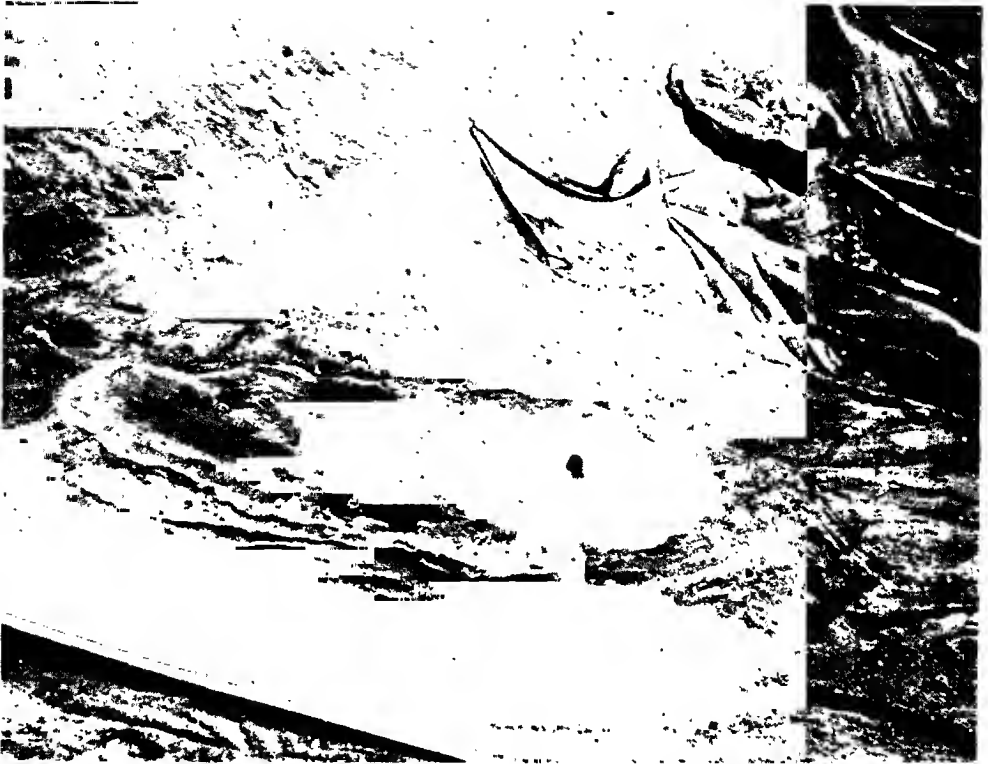
We can thus say that the Sutton Hoo ship appears to belong to what may be called the Nydam line of development, though there may have been other types co-existent with it. Looking at our ship and considering the royal character of the things deposited in it, we cannot dismiss the possibility that it was a state barge like the later Oseberg ship, and that it may have been contemporary with ships of a considerably different type designed for other more ordinary purposes.

The boat was not new when buried. This may be judged from repairs which could be clearly traced in the hull. The most notable was a doubling of the frequency of the clench-nails along the junction of strakes 4 and 5 on the port side amidships. There was also a small tingle in this region and altogether it appeared that the ship had suffered heavy damage here. There is nothing novel in the use of a part-worn ship in a burial. The Gokstad and Oseberg ships were both past their prime and if the Sutton Hoo interment can be dated round about A.D. 630 it may be that the boat was at least 30 years old and even belonged to the previous century.

The Sutton Hoo ship shows many advances on the Nydam prototype but, as far as can be seen, it was not making that advance towards keel-construction which is plainly seen in other older boats in Northern Europe. The lines of the ship show a great improvement in form which would increase the ship's stability. Further, the Sutton Hoo ship-wrights were gaining a greater confidence in handling their materials, for the boat has nine strakes to the Nydam's six, and instead of being monoxylous they were made up of four or five pieces joined together from stem to stern. These joints seem to have been of overlapping type and were secured by four clench-nails. Even so, allowing for the greater size of the Sutton Hoo ship, the pieces of wood were very large, and their breadth was not less than 1 foot 3 inches while their thickness was not less than 1 inch.

The strakes were clinkered together with iron clench-nails. These were evenly spaced about 7 inches apart and had a length of about 2 inches. On the outside of the ship the nail had a slightly domed circular head $1\frac{1}{4}$ inches in diameter, and on the inside it has been riveted over a diamond-shaped iron rove measuring 2 inches by 1 inch. All the nails were in an extreme state of rust and it is doubtful whether any metallic iron remained, though the form was readily recognizable and all the nails were exactly in their places except in the burial-chamber area, where the sides of the boat had been exposed to decay for many years without that complete inclusion in the sand which made it

PLATE I



VII W OF CLAY PAN FOUND ABOVE THE SITE OF THE BURIAL CHAMBER (see p. 12)

Pl. C. W. Phillips

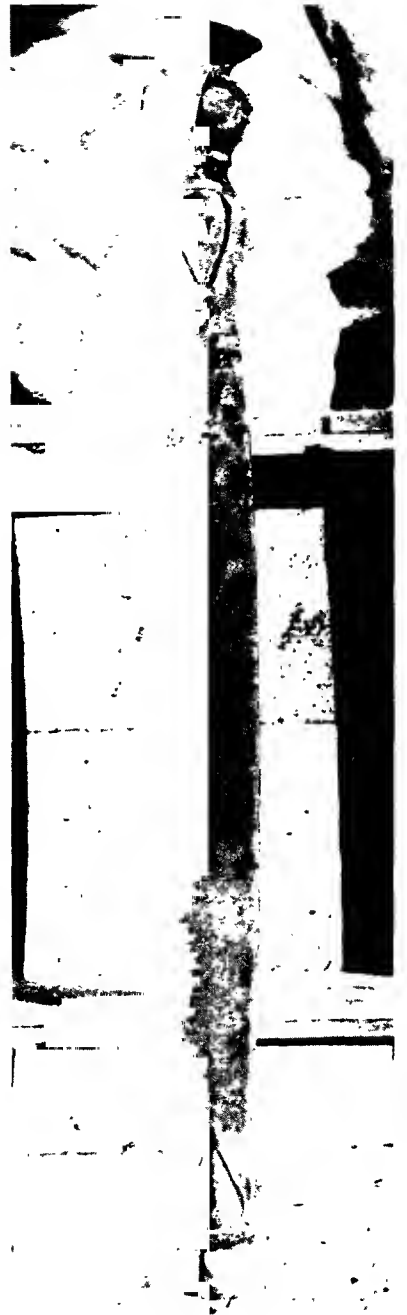


IRON STAND AFTER CLEANING (see pp. 44, 71)
Pl. O. G. S. Crawford

PLATE III



BRONZE-MOUNTED TERMINAL OF THE WHISTSTONE (see p. 15)
Pl. O. G. S. Crawford



THE WHISTSTONE (see p. 15)
Pl. O. G. S. Crawford

PLATE IV



CRU SHIELD HORNS AND SLIVER MOUNDS (see pp. 17, 18, 21)
Ph. O. G. S. Crawford

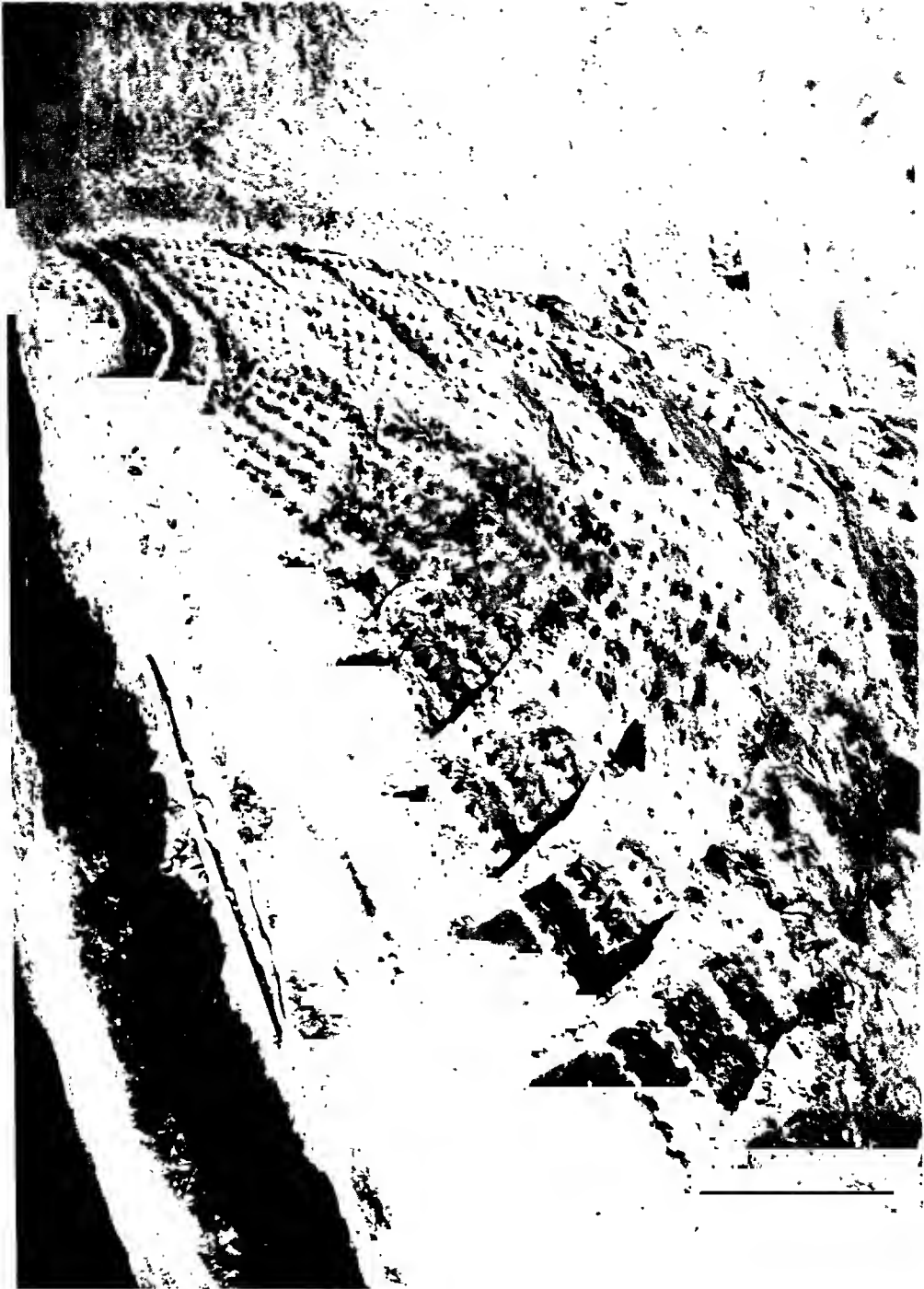
PLATE V



THE DISPOSTE (MID-DIVISION) UNDER THE GREAT SILVER DISH SHOWING IN THE CENTER THE IMPRESSION OF THE FOOT-RING
On the right the smaller silver dish, small silver bowl, and one of the gold bottles. In the center is leather, cloth, and pillow stuffing (see pp. 18, 20)

Pl. O. G. S. Crawford

PLATE VI



GENERAL VIEW OF AFTERRPART OF THE SHIP (see pp. 21, 26)
The apparent ribs are masses of sand enclosing traces of the actual ribs, and cut away along the bottom in order to study the nodding

Pl. C. W. Phillips

PLATE VII



VIEW OF THE STERN OF THE SHIP SHOWING TWO RIBS WITH EXTRA STRENGTHENING ON THE STARBOARD
SIDE FOR SUPPORT OF THE SLEEPING OAR (Metric scale) (see p. 25)
Ph. C. W. Phillips

PLATE VIII



THE BOW OF THE SHIP FROM THE PORT SIDE. (see p. 26)

Ph. C. W. Phillips

THE SUTTON HOO SHIP-BURIAL

impossible for them to move in the fore and aft parts of the ship, even when all wood had completely rotted.

It is unfortunate that nothing definite is known about the form of the gunwales except that the tholes, which were of the Nydam type, were spiked to them directly instead of being lashed. The spikes, which are $6\frac{1}{2}$ inches long, were driven vertically into the gunwale in pairs at each end of the thole base. This implies that the gunwale had a considerable thickness, and the close setting of the groups of spikes also suggests that the tholes must have stood so close together that they formed an unbroken feature of the upper edge of the gunwale. The tholes could be clearly seen as dark stains of the characteristic Nydam form even though no scrap of wood remained. It was even possible to think that some of them showed signs of wear. The hole bored through the claw of the thole, which is a feature of the Nydam boat, could not be seen though its original presence is quite probable. The number of ribs is 26. With few exceptions these are equally spaced about 3 feet from each other, but variations occur at bow and stern. Unfortunately nothing remained of the wood of the Sutton Hoo ship but films of darkened sand, though the form of the ribs could be fairly accurately judged in their broader lines, and it was plain that they decreased in width as they approached the ends, which were joined to the skin of the ship by extra long clench-nails of iron. At all other points the ribs must have been lashed to cleats left standing on the strakes as in the Nydam ship. No satisfactory trace of this could be seen, but as clench-nails holding the skin of the ship together regularly occur under the ribs there can be little doubt that the Nydam method was used. Certainly the ribs were only nailed at their ends. This is an interesting feature in early northern boat construction as lashings are used throughout in the Viking ships.

At first it was thought that the ribs had probably been removed from the burial chamber part of the ship, but since the end-nails were found in position this can hardly have been the case.

There was a special development of the ribs in the stern. Here a closely-set group of three occurred (nos. 24-26, PLATE VII). Of these 24 and 25 were asymmetrical with heavily clubbed ends on the star-board side. These ends were held to the skin of the ship by a quincunx arrangement of five large nails. Unfortunately there was no trace of a steering oar nor was there any evidence of how one was fixed, though it may be stated fairly confidently that there was also no obvious sign of the large external wooden button on which steering oars of the

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Viking type moved. We must therefore suppose a large broad bladed oar of the Nydam type, suspended over the starboard gunwale by a cable secured to a rib and knotted through a hole in the blade, the pivotal action of the oar being achieved by its passage through a heavy loop of leather (?) attached to the gunwale between the two thickened ends of ribs 24 and 25. A tiller handle would be fixed to the end of the oar loom, and the oar may have had its blade protected by a batten pinned to its inner side to prevent wear on the stern post of the ship when the needs of steering carried it under the ship's side. We may also suppose that there was a small platform in the stern for the steersman.

Both the stem and the stern posts of the ship were so far gone in decay that little can be said of them. They presented quite sharp edges to the water and must have been very substantial, but we cannot tell whether they had any decoration or whether they were bored with holes for possible towing and hauling on shore as in the case of the Nydam ship.

The plan of the ship shows several interesting features. The gunwale plan has a tendency towards re-entrant curves at bow and stern, quite different from the pure curve of the Nydam ship's gunwales. Those who have seen the drawing of the Snape Common boat have been puzzled by its rounded stern. This is contrary to what our information has led us to expect in ships of the Dark Ages when equal ends, both sharp, were the rule. It seemed probable that the excavator had misunderstood what he saw, but now the Sutton Hoo ship appears to present a similar feature. It is a misfortune that the end of the stern has been disturbed by the plough, protruding as it does far beyond the modern limits of the barrow. The run of the two gunwales suggests that they may not have met in a point but curved round in a small counter. This point can never be decided, but the Snape Common boat's plan gains in authority from this fact.

Nothing remained of the internal fittings of the Sutton Hoo ship beyond the ribs and a continuous trace of something like a side seat about 18 inches wide which ran all along the port side below the gunwale strake. The run of this feature was broken by the burial chamber, but otherwise it was constant. It may have been a sequence of pieces of light movable decking of the sort which could be put in or taken out between the thwarts of the Gokstad ship. Its survival may be due to its closeness to the side of the ship, though none was seen on the starboard side. Here and there faint traces of decayed wood appeared

THE SUTTON HOO SHIP-BURIAL

inside the body of the boat, but nothing could be made of them. One curiously shaped trace in the stern may have been the remains of a large baling scoop, or perhaps a workman's tool tray. There were no signs of thwarts though the ship must have had them. It also seems certain that no oars had been placed on board, and the closeness of the ship's sides to those of the trench made it impossible for them to have been put in their places over the gunwales. If placed on board their collective mass of 38 pieces of wood, many of them as much as 12 feet long, would have left no trace. The same may be said of the steering oar. There was no anchor, nor was the ship moored in the grave as in the case of the Oseberg ship. The posture of the ship was abnormal in that its stern was presented to the nearest water, the river Deben, and not its bow as might have been expected. The Viking north-south orientation was not followed.

A comparison of the lines of the Nydam ship with those of our vessel shows that there had been a great advance in the two centuries which may be supposed to have elapsed between their building. The Sutton Hoo ship is a far more seaworthy craft, though it has not yet made the great change in keel design which heralds the use of sail. It may be said that with this exception the construction of its hull is rapidly approaching the form and technique of Viking times. The East Anglian ship-wrights had more confidence in their building methods and did not rely so much on large undivided pieces of wood as did the builders of the Nydam ship. It cannot be said that the Sutton Hoo ship suggests stagnation in Anglo-Saxon England's ship-yards. At the same time naval architecture may have become unprogressive in the next century, so that by the time of the Viking raids the inhabitants were at a grave disadvantage on the sea when attacked by the fine sailing vessels which the northern yards were then producing.

Our ship is a truly impressive monument and the most notable object in the pagan Anglo-Saxon archaeology of England.

The Sutton Hoo Ship-Burial

II. THE GOLD ORNAMENTS, by T. D. KENDRICK

MOST of the gold ornaments represent the very splendid outer harness of a princely apparel, doubtless the sword-belt and baldric, and also a purse and the straps on which it was slung. From the point of view of sheer weight of gold, the chief find was a huge and heavy buckle, inlaid with niello ; but the harness included twenty-eight other pieces, all richly jewelled with garnets and, in some instances, blue and white mosaic glass. We must remember too that the sword has a jewelled gold hilt and two hemi-spherical bosses of gold, jewelled with garnet and blue glass, on the sheath (PLATE IX). There are also a number of minor fragments of gold, including one or two unornamented strap-mounts, two jewelled filigree strips of great delicacy, and a tiny mount of gold foil in the form of an animal. The excavators also found various ornamental fittings of wood or a similar material that were plated with gold.

The great buckle (PLATE XA), 6 inches in length, is chased with intricate animal-patterns and interlace, and is further decorated with a lavish and admirably executed niello-inlay. It very easily out-classes in gold value any other Anglo-Saxon ornament known to us, and its decoration is in the highest degree unusual ; but we have seen before, on the mounts found at Caenby, Lincs., the little animal crouching at the very end of this magnificent object. For the rest, we can only say that the main system of animal ornament strikes us as having a markedly Vendel (*i.e.* Swedish) character. The big shield-boss also reminds us of the finds from the Vendel graves, so we cannot fail to attach importance to the extent to which this new Suffolk archaeology is influenced by fashions that seem in origin to be Scandinavian.

The pieces that many regard as the most amazing finds are the two hinged clasps (PLATES IX, XX), each of which is $4\frac{3}{4}$ inches in length. They have a fastening pin attached by a chain, both of gold, and the head of the pin is fashioned in the form of a jewelled animal mask. The faces of the clasps bear rectangular panels of step-pattern cloisonné containing garnets and blue and white mosaic glass, and the borders of these rectangular areas bear a complicated interlacing animal-pattern

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that is done in a remarkable sunk cell (*champlevé*) garnet-inlay. It is an astonishing technical performance, peculiar to Sutton Hoo; and a glance at the patterns shows that the skill of the lapidary must have been of the highest order. The curved ends of these clasps bear a design made up of pairs of linked boars with crested backs, again sumptuously jewelled and having tiny stylised animals in filigree in the background spaces. These tusked and crested boars are new in our Pagan Saxon art, but we may surmise that they long remained a favourite subject in this region, for one of them appears again on the eleventh century Saxon tympanum at Ipswich. Another most interesting point about these clasps is that the main ornamental system, the rectangular space of geometric decoration with a surround of interlaced animals, seems to be a pagan forerunner of the type of ornament subsequently used to decorate the pages of Hiberno-Saxon manuscripts.

The most gorgeous, and now the most popular find, was the jewelled frame and mounts of a purse-flap (PLATE XI), measuring $7\frac{1}{2}$ inches in length. It was set with garnets and glass, and enriched with filigree, and has three hinged fastenings for straps, and an admirably efficient sliding clasp for opening and closing the purse. The face of the flap was ornamented with seven small jewelled plaques and four jewelled studs. The central mount in the upper row has symmetrical pairs of opposed animals with interlacing limbs, the two middle animals being linked together back to back. This is set between a pair of hexagonal mounts notable for their extremely intricate and delicate *cloisonné*. In the lower row there is a central pair of mounts, apparently representing a falcon seizing some lesser bird, and two flanking mounts that give us a stylised representation of the 'Daniel in the Lions' Den' pattern that is not uncommon in Merovingian art. These last two mounts, and the central one in the upper row, afford further instances of the use of the *champlevé* technique. Thus the features of the Prophet are minute little pieces of garnet sunk into the face of the gold plaque. It requires little imagination to picture the complete purse, which contained 40 gold coins and 2 little gold ingots, as one of the most extravagantly sumptuous trappings that a Teutonic grave has ever given to us.

Most of the other ornaments are buckles (PLATE XB) and strap-mounts (PLATE XC) and the like. They are set with garnets only, but many of them are most handsome and precious pieces that present us with numerous *cloisonné* patterns of surprising originality. Thus one pair of rectangular mounts bear an interlace design, a twist, done in *cloisonné*, and others present us with a variety of themes that make

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much use of a characteristic mushroom-shaped cell. This is by no means a common kind of cell in Anglo-Saxon cloisonné elsewhere, and it therefore helps us to define the new Suffolk school.

Among these lesser mounts are two little pyramidical gold studs bearing cloisonné inlay and having the edges cut out of the solid garnet. On the top of each is a dainty square of mosaic glass. The backs are slotted for attachment to straps, and as they were found one on each side of the sword, we can assume they decorated the sword-knot. In spite of their small size, they illustrate perhaps better than any other piece, the splendid precision and great ingenuity of the Suffolk Hoo jeweller. All the gold ornaments seem to have been made at the same place and at the same time, and these two tiny mounts plainly show that we have now revealed to us the work of one of the greatest craftsmen in the whole Teutonic world.

III. THE LARGE HANGING-BOWL*

by T. D. KENDRICK

(PLATE XII)

The largest of the hanging-bowls from Sutton Hoo is distinguished by the abundance and the brilliance of the mosaic glass adorning its mounts, and by the mannered drawing of its delicate Celtic scroll-patterns. The character of the mosaic glass links this bowl very closely with the newly discovered bowl from Scunthorpe, Lincs., and, but less closely, with the bowl from Barlaston, Staffs., and the bowl represented by the Northumberland escutcheons in the British Museum. Only the Scunthorpe bowl, however, bears mosaic of comparable elegance, and it is also much closer to the Sutton Hoo bowl in its ornamental style. This Celtic style has been studied by Mr Leeds¹ and Françoise Henry,² and, therefore, to Sutton Hoo and Scunthorpe we can add as further representatives of the same school of design the well-known Faversham mounts,³ the escutcheon from Barrington, Cambridge, the enamelled bronze vessel from Needham Market, Suffolk, and the escutcheon from Benniworth, Lincs. The bowl from Bagington,

* For details of the escutcheons and mounts see *British Museum Quarterly*, 1939, XIII, pl. LI.

¹ *Celtic Ornament*. Oxford, 1933.

² *Journ. R. Soc. Ant. Ireland*, 1936, LXVI, pp. 225 ff.

³ Leeds, fig. 39 a and b.

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Warwickshire, is a near relation, and so probably is the Basingstoke bowl. The group is, accordingly, principally eastern and midland in distribution, and has only a rather dubious extension north of the Humber.⁴ With the possible exception of the Benniworth escutcheon,⁵ none of the enamels shows the influence of the flamboyant designs of the 'developed trumpet-pattern' school, as represented by the Winchester bowl and the Oxford escutcheon; but there is some evidence of a connexion with the Kentish 'Roman' series of the Dover type, for instance little groups of floating leaves on the escutcheons of the Scunthorpe bowl. This helps to tie down the Celtic group of bowls to the Lowland Zone. But more important is the Sutton Hoo evidence that mosaic glass of the sort used to decorate a hanging-bowl was also employed in the manufacture of the local Teutonic jewellery. It is difficult to interpret this otherwise than as an indication that the bowl was made in or near the neighbourhood in which it was found; and this means that the whole group of Celtic bowls is given a vague, but valuable, local focus.

On the Sutton Hoo bowl, the scroll-work has as its principal pattern a delicate 'hair-spring' coil⁶ with a ragged interior terminal (FIG. 2). This is a pattern with a back-ground that is well known, and in origin it is generally believed to be connected with the Late Roman embossed brooches that come mostly from northern England.⁷ In the Dark Ages it is to be found on Hiberno-Scottish bronzes, the most notable example being a celebrated latchet now at Dublin.⁸ Numerous scroll-patterns that are obviously of the same style are to be found on the early penannular brooches and the 'hand-pins' of Ireland, and a glance at Mr Leeds's book and Françoise Henry's writings makes it immediately plain that the Celtic art of the bowls in England has an Irish counterpart that is geographically independent of the Pagan Saxon world. It would be a waste of time to suggest that a hanging-bowl found in East Anglia came from Ireland, or that the Dublin latchet was made in Suffolk; for the Sutton Hoo bowl is as distinctively an English product as the latchet is an Irish one. We can, however, reasonably ask whether the ornamental scroll upon these objects travelled from one region to the other; or whether the bond between

⁴ Françoise Henry includes the bowl from Capheaton, Northumberland. The British Museum escutcheons from the same county are stylistically only distant relatives.

⁵ *Antiquaries Journal*, 1936, xvi, p. 98.

⁶ Kendrick, *Anglo-Saxon Art*. London, 1938. p. 54.

⁷ Leeds, p. 142; Kendrick, p. 39. ⁸ Leeds, fig. 36.

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them is simply the appearance on both of a pattern independently derived from the same Romano-British source.

This particular pattern, the hair-spring coil with the ragged terminal, plays a prominent part in the seventh and eighth century ornament of Christian Ireland and of the Columban church. It appears, for instance, in the trumpet-pattern page of the Book of Durrow and in the trumpet-pattern designs on the back of the Tara Brooch. Moreover, the development of the Irish pattern in its known stages, (i) latchet, (ii) Durrow, (iii) Tara Brooch, is intelligible and satisfactorily complete. How the hair-spring scroll comes to be thus combined with the 'developed trumpet-pattern', we need not now enquire. It is sufficient to note that the fusion seems to have been an Irish achievement, and has taken place before the painting of the Book of Durrow. Our interest here must be centred upon the hair-spring scroll itself, and the possible migration of this pattern from Lowland England to Ireland, or *vice versa*.

I think it can be satisfactorily maintained that the pattern as seen on the Irish latchet is closer to its prototype on the embossed brooches than is the related pattern on the Sutton Hoo bowl. On the evidence before us, this means that the latchet may be said to possess a stylistic priority, and it is therefore impossible to entertain the idea that the pattern on the English bowl is the source of the Irish ornament in question. It may be added that in my own opinion there is a considerable archaeological probability that the latchet is earlier in date than the bowl.

On the other hand, it is equally difficult to believe that the Irish design travelled to eastern England and inspired the maker of the Sutton Hoo bowl. There is, of course, a very remarkable link between the Columban church and the Sutton Hoo area; because in 635 Aidan founded the Columban monastery of Lindisfarne in Northumberland, and in 654 Cedd, a Northumbrian from Lindisfarne, began his mission to the East Angles. And we know that in the preceding year both the King of the East Angles and the King of the Middle Angles had visited the Northumbrian court. But the visits to Oswy and Cedd's mission took place at too late a date for us to suggest that they explain the appearance of a particular kind of ornament in the Sutton Hoo barrow.

All these considerations seem to show, therefore, that we must regard the Sutton Hoo hair-spring scroll as an independent, more mannered, and very distant, variant of the ornament on the Irish

PLATE IX



THE SWORD—HILT AND SHEATH (see pp. 16, 17, 28, 72)

The Gold Clasps (see pp. 28-9 and also plate XX) are on the right

Ph. O. G. S. Crawford



A



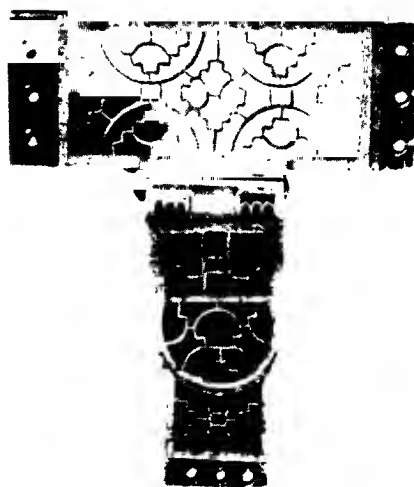
B



D



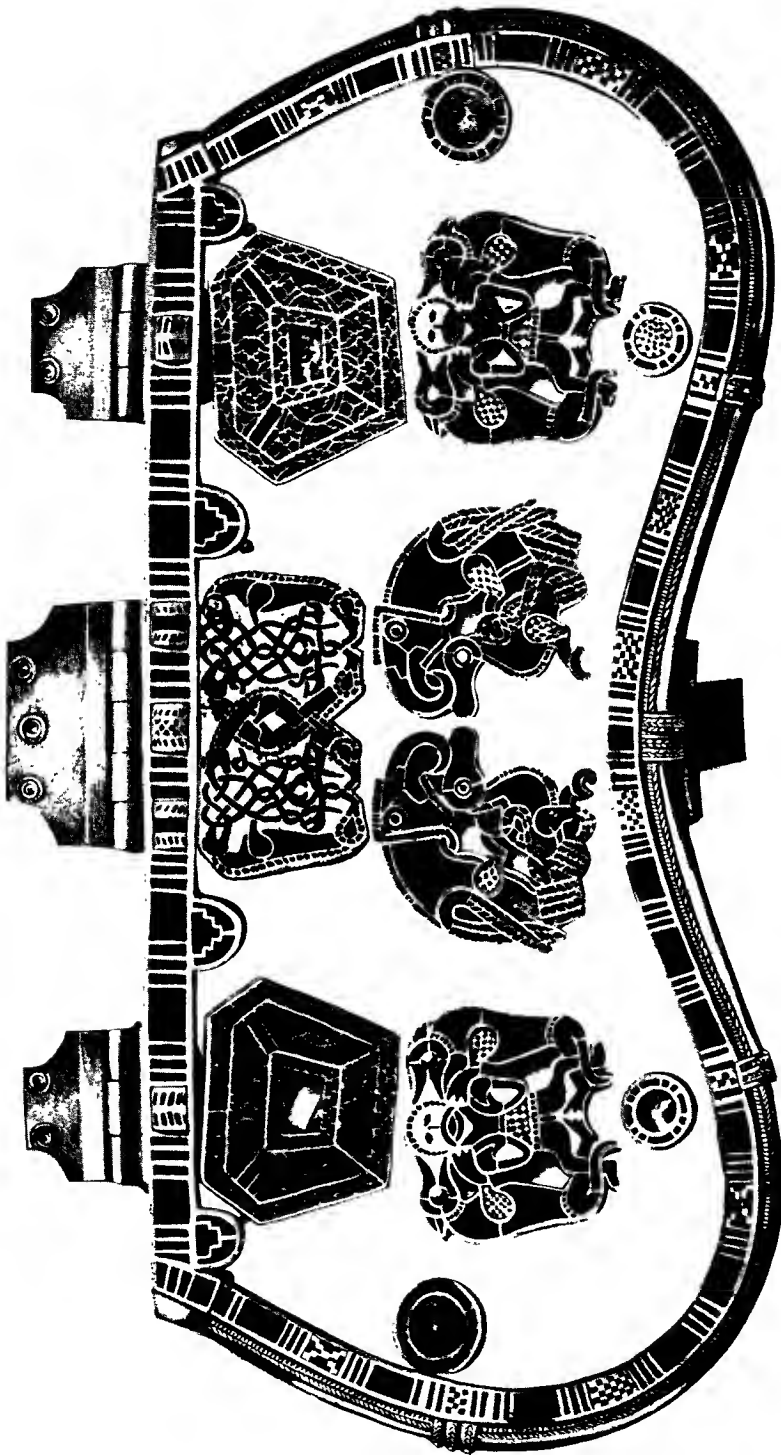
E



C

A. GOLD BUCKLE WITH NIFFLO ORNAMENT (see p. 28).
 B. JEWELLED GOLD BUCKLE (see p. 26).
 C. JEWELLED STRAP-FITTING, WITH HINGED TONGUE AND MOVABLE END HANGING FROM ITS SIDE (see p. 29).
 D, E. CONTROL STAMPS OF THE EMPEROR ANASTASIUS I ON BACK OF THE SILVER DISH (PLATE XVIII) (see pp. 18, 41).

PLATE XI



PURSE MOUNT OF GOLD AND JEWELS (see pp. 16, 29, 37)
By permission of the British Museum

PLATE XII



BRONZE BOWLS WITH SPINNING THROUGHS THE HANDLE (see pp. 12, 30, 109)
Pl. O. G. S. Crawford

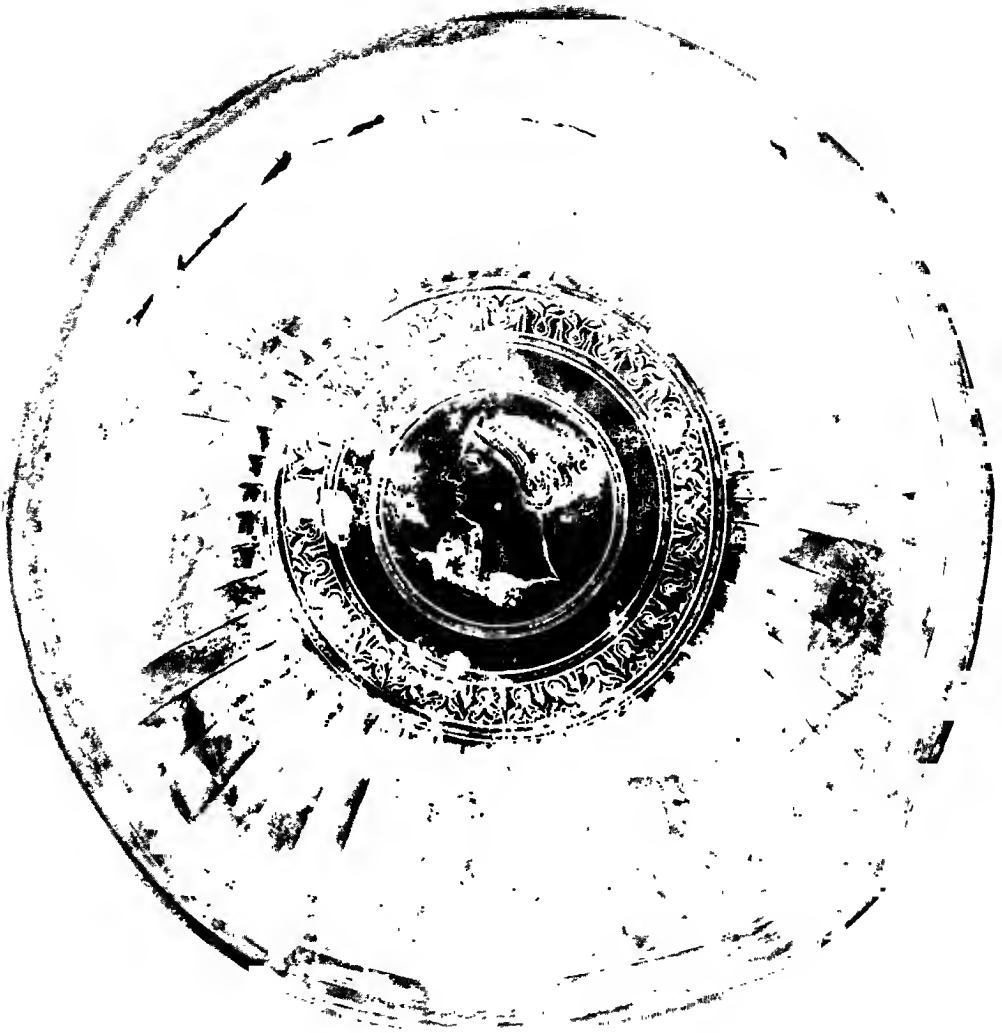
PLATE XIII



NEST OF INTRUD SILVER BOWLS (see pp. 46, 53, 72). RIM OF SINGLE DETACHED BOWL IN FOREGROUND,
THE SWORD-HILL AND SPOONS ARE ON THE LEFT

Pl. O. G. S. Crawford

PLATE XIV



SILVER BOWL WITH CLASSICAL HEAD IN MEDALLION (see pp. 2, 18, 50 and PLATE V)

By permission of the British Museum

PLATE XV



THE SHIELD-BOSS AND ASSOCIATED ORNAMENTS (see pp. 15, 75)
Ph. O. G. S. Crawford

PLATE XVI



CALTORNS. REMAINS OF IRON TACKET, SILVER DISH AND BASIN (see pp. 10, 16, 70)
Ph. O. G. S. Crawford

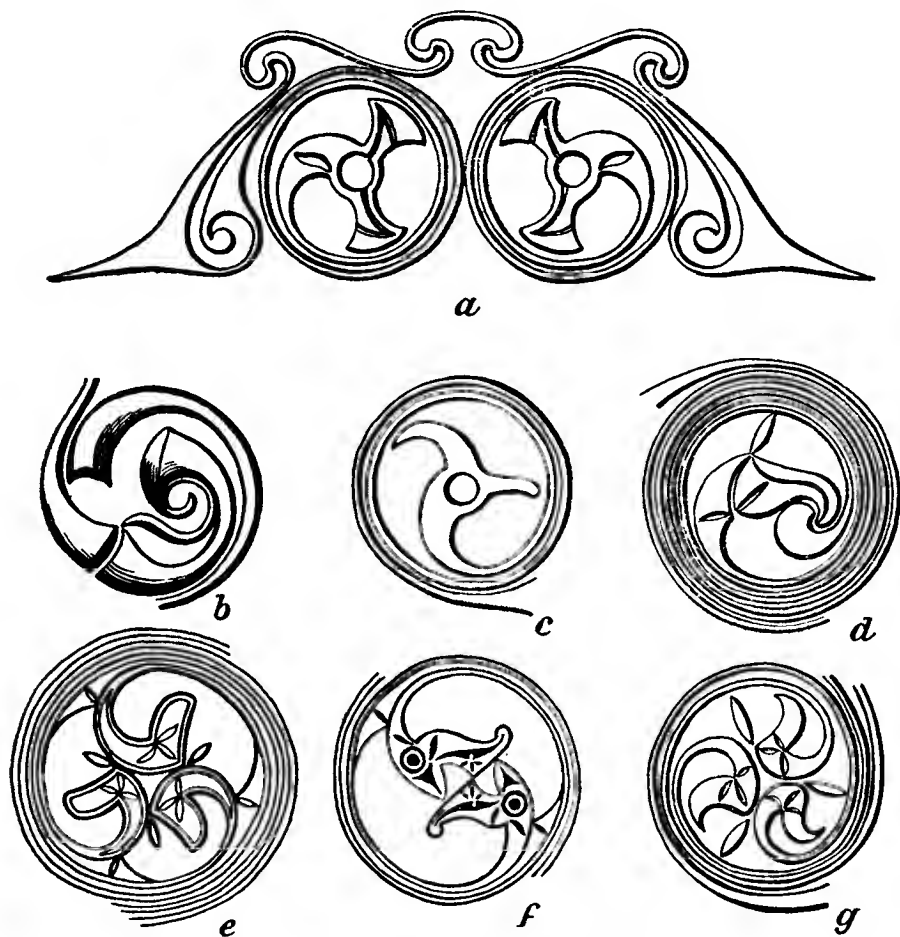


FIG. 2. EXAMPLES OF THE 'HAIR-SPRING' SCROLL IN METALWORK AND MANUSCRIPTS

(a) Hanging Bowl, Sutton Hoo (b) Late Roman embossed Brooch, Silchester (c) Bronze Latchet, Dublin
 (d) Book of Durrow (e) Lindisfarne Gospels (f) Lindisfarne Gospels (g) Tara Brooch

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latchet. But we may still ask if Lindisfarne does not show some sign of being influenced by the English designs made accessible after its foundation as a Columban monastery. We do, in fact, find that the hair-spring scroll occurs in the trumpet-pattern of the Gospels (*c.* 700); but to my mind there is no doubt that this particular ornamental element must be accepted as an entirely Columban feature. The reason I say this is because the hair-spring scroll in the Lindisfarne Gospels is almost exactly the same as that on the back of the Tara Brooch. This seems to me to be decisive. If it be argued that as the Gospels were illuminated some sixty years after the foundation, there is opportunity for an English form of the pattern to have reached the monastery at an earlier date, I can only reply that this would presumably have resulted in the Gospels showing some signs of this southern disturbance in the Columban development. But there is no evidence of interruption. The Northumbrian hair-spring scroll is purely Irish.

The independence of the English style is perhaps reflected also in the richness and sumptuous character of the Anglian mosaic glass inlay, which has a greater and more emphatic magnificence than that of the early Irish hand-pins and penannular brooches; a splendour, in fact, that does not fall far short of the standard set by the flashiest of the Roman mosaic brooches. The vitality of this surviving glass-industry in the British background to Saxon England seems to me to be a most significant new fact. We certainly cannot pretend to disbelieve in the existence of such an industry, now that we know it was of sufficient prominence to invite the respectful attention of one of the best goldsmiths who ever made Saxon cloisonné jewellery.

IV. THE ARCHAEOLOGY OF THE JEWELLERY

by T. D. KENDRICK

We have not hitherto considered the East Angles as a showy and conspicuously prosperous folk. In the Settlement Period we find them, as Mr Myres says, 'a federation of several smaller peoples' living in groups that were geographically isolated and to a certain extent independent of each other. Their material wealth would be judged by such a cemetery as Caistor-by-Norwich, and on the evidence available before the Sutton Hoo discovery we should not have credited them with any unusual skill in the crafts or with the possession

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of notable riches. But we now know that in the early seventh century the folk inhabiting the coastal area between the Orwell and the Alde were the subjects of a prince whose grave contained one of the most magnificent and costly furnitures that has ever been found in a Teutonic tomb. Hitherto, when we have wanted to show off the richness of Anglo-Saxon England, we have looked to Kent. Now we have learnt that in one limited area of Suffolk, where lies Rendlesham, a *vicus regius* of the East Anglian ruling dynasty, the maximum brilliance of Kentish archaeology was not only equalled, but surpassed in splendour ; and we realize that the house of Wuffa (the sixth century grandfather of Redwald) thus put to shame the rich royalties of Kent, at the time of, or only shortly after, the reign of Kent's greatest king, Ethelbert.

Jutish Kent had no doubt been rich in gold and jewels for many years before Ethelbert reigned, but for the purpose of these notes we are only concerned with the Kentish background to Sutton Hoo, that is to say the archaeology of the late sixth and early seventh century. We know what some of the Kentish jewellery of this period was like because one of the folk buried at Sarre in Thanet possessed a brooch, now in the British Museum, that was accompanied by a necklace bearing coin-pendants which prove the grave cannot be earlier than Ethelbert's reign. The history of the pattern on this brooch,¹ and the style of its cloisonné, shows, as we might expect, that it comes late in the Kentish series of the big composite brooches; and if we compare this piece with the Sutton Hoo finds, we see that Suffolk had gone ahead in so far as the quality of the goldsmith's work is concerned. It is undoubtedly a parallel piece, because it bears a distinctive 'sloping' cloisonné pattern that was also used by the Sutton Hoo jeweller. Yet it is completely outclassed in brilliance and sparkle. This seems to warn us that the flowering of the Sutton Hoo school takes place at a time when the former excellence of the Kentish work is weakening.

This, however, is a conclusion that is based on one small group of late Kentish brooches, and it is a simplified statement of the position that needs qualification. As a doorway into eastern Kent, on the Watling Street, stands Faversham, the site of one of the most famous cemeteries in the county. Here, so I now interpret the facts, we seem to find a culture that we shall have to some extent to distinguish from that of the Canterbury end of Kent ; for Faversham provides us with a piece of Sutton Hoo jewellery and, in addition, evidence of the influence of the Sutton Hoo school. In the British Museum there is

¹ ANTIQUITY, 1933, VII, PLATE IV, 4, opp. p. 441.

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a very remarkable brooch that we can now safely assign to the same workshop as that which produced the Sutton Hoo jewels. It is a composite brooch with a debased pattern (judged by the obviously earlier forms of the same design), yet it bears the most delicate and astonishing cloisonné in the whole county.² This circumstance led me to the mistaken conclusion that it should be grouped with the good early cloisonné that I was trying seven years ago to separate from the inferior later kinds. I did, however, stress its unusual character with an emphasis that I am now thankful to observe, and perhaps my error may now be pardoned on the grounds that I had unsuspectingly stumbled upon Sutton Hoo itself, the then undreamt-of Anglian school of cloisonné. There can be no doubt about this, because the remarkable brooch to which I refer, apart from the striking resemblance between the distinctive general character of its cloisonné and that of Sutton Hoo, actually repeats the astonishing cloisonné interlace so successfully attempted by the Sutton Hoo jeweller; and it does so by means of an identical device, the cloison with the looped or beaded bend (FIG. 3). No other examples of this are known.

This brooch is also important because it provides instances of the 'mushroom' cell that is so frequent at Sutton Hoo, and so rare elsewhere. The interesting point is that though there are a few examples of this type of cell at other places in eastern England besides Sutton Hoo (for instance, the pendant from Wilton, Norfolk, in the British Museum), there are no examples in Kent except at Faversham, where it is to be found on two pendants.³ This is what I mean by Sutton Hoo influence. Thus we have Faversham very clearly established as either a point of entry into Kent for the Sutton Hoo style, or a Kentish source from which the Sutton Hoo style emerged. It is, of course, hazardous to say much on this subject at the moment; but it does seem that we must at least temporarily entertain the idea that the Sutton Hoo school was one of such dominating brilliance that its glory was, as it were, reflected back into the very country where this kind of jewellery had been first established as an English craft.

One reason for inclining to this view is that the Sutton Hoo style is on the whole markedly un-Kentish in many important respects. For instance, the use of mosaic glass in combination with garnets is

² ANTIQUITY VII, PLATE V, opp. p. 448.

³ The reader will perhaps be indulgent enough to remember that the research on which a statement of this kind should be based is not very easily carried out in war-time.

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unknown in Kent⁴; the striking *champlevé* technique is likewise unknown; the Kentish system of the filigree background is scarcely used at Sutton Hoo, where it is to be found only in a modest form on the clasps; and the Sutton Hoo animal-patterns are to a great extent different from those of Kent. All this suggests a large measure of independence for the Suffolk school, which we may thus regard as having influenced the style and technique of the jewellery worn by the folk of Faversham. Six months ago such a notion would have been dismissed as impossible nonsense; even now it is only with difficulty that we can bring ourselves to entertain the idea; and it is a tribute to the significance of Sutton Hoo that the archaeological ascendancy of Kent should be challenged in this way.

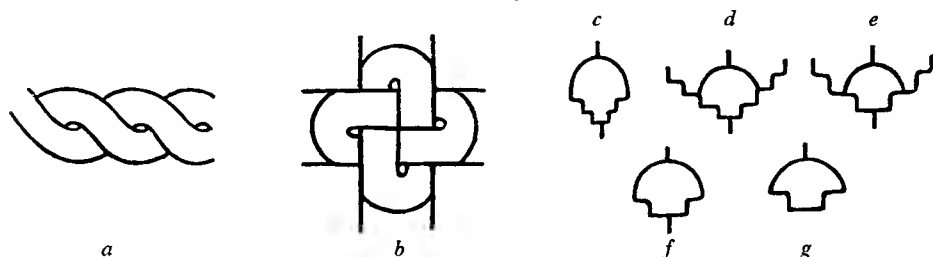


FIG. 3. CLOISONNÉ INTERLACE-PATTERNS FROM SUTTON HOO (a), AND FAVERSHAM (b); TYPES OF MUSHROOM CELL FROM FOREST GATE (c), SUTTON HOO (d, f), WOODBRIDGE (e), AND WILTON (g)

By permission of the British Museum

The foreign affinities of the Sutton Hoo work also seem to confirm the individuality of the Suffolk school, and suggest that it was to a large extent free from the domination of the Kentish style. The purse-mount example of the 'Daniel in the Lions' Den' pattern (PLATE XI) is plainly based on the *derived* Frankish versions of the theme, which were not copied in Kent: and it is quite distinct from the sub-Antique version of the same subject that Mr Leeds found at Bifrons.⁵ Then there is the 'mushroom' cell. This seems to have originated on the Rhine, as it can there be detected in the process of evolution,⁶ and the prolific use of this type of cloison at Sutton Hoo is evidence of a

⁴ In the Canterbury Museum there is a small cloisonné pendant set with garnets that has a central ornament that looks at first glance like a tiny piece of mosaic glass. But this centre is in fact a garnet keyed to hold a blue glass covering layer.

⁵ E. T. Leeds, *Early Anglo-Saxon Art and Archaeology*. Oxford, 1936. Plate VII.

⁶ I suggest the original form is to be seen in the Heidenheim brooch. Veeck, *Die Alamannen in Württemberg*, 1931. Tf. 26, A1.

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Continental connexion that is only apparent in Kent in rare instances at Faversham, the cemetery where we have found a veritable work of the Sutton Hoo school. The most remarkable parallel abroad to the Suffolk work with the mushroom cell is the brooch fixed to the Egbert Shrine at Trier.⁷ The garnet-inlay on this so exactly resembles the cloisonné of the British Museum pendant from Wilton, Norfolk, that a few years ago I claimed the Wilton piece, which has obvious Sutton Hoo affinities, as Merovingian work, and I believe that some of the Sutton Hoo pieces themselves would be labelled Merovingian, if we did not know that they had in fact been found in England. It may be added on this same subject of the Frankish feeling about the Sutton Hoo work that the jewellery from this new ship-burial in the eyes of some observers reflects the traditions of the Childeric school in a way that Kentish work does not. This is not very easily explained, but it is most clearly evident in details like the purse-rim with its little groups of vertical cloisons and its herring-bone bars.

Another instance of the new orientation of these finds is that the closest parallel to the mounts on the purse-flap is the beautiful Reinstrup brooch in Denmark, which not only bears the typical close-set delicate cloisonné, but also a stylised version of the 'Daniel in the Lions' Den' motive. It seems to be probable that this brooch is a Suffolk export, just like the Kentish-fashion brooch that was made in Suffolk and found in Faversham.

The most striking foreign contribution to Sutton Hoo archaeology is the Scandinavian influence to which I have already referred. There is undoubtedly a Vendel feel about some of these finds, particularly the great shield-boss which might well have come from one of the graves in this famous Swedish cemetery of ship-burials. The sword-hilt is also very like some of those found in the North, and I have no doubt that these resemblances will be found to be of a more arresting kind when we have cleaned the helmet and the gilt fittings with the snouted animal-masks that Mr Phillips thinks are part of the ornaments of the shield. The decoration of the great gold buckle is another example of this northern influence.

Thus, if I may conclude by quoting from the *British Museum Quarterly*,⁸ 'the salient fact of the Sutton Hoo discovery is that taken as a whole it is the revelation of a new Pagan Saxon art and archaeology

⁷ *Antiquaries Journal*, 1937, XVII, Plate LXXVIII, D.

⁸ XIII (1939), no. 4, p. 135

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in this country. We may recognize certain period-tendencies in the general style and we may identify certain points of contact with other archaeologies ; but the final result must be that Sutton Hoo is unfamiliar and startling. We seem to have here the crystallization of various influences that had not previously been so combined. It is much more than the pale reflection of the Jutish culture in Kent ; it is the independent Golden Age of East Anglia, and an archaeological glory illuminating and confirming the historical fact of a dawning political ascendancy'.

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V. THE SILVER,* by ERNST KITZINGER

THE silver plate in the Sutton Hoo treasure is not as uniform in technique and style as the gold ornaments. While the latter can be claimed as the work of a special 'Sutton Hoo School' the silver is a haphazard collection of pieces differing in date and origin, and can only be discussed by taking each item separately.

THE LARGE DISH (PLATES XVI, XVII, XVIII)

This is a flat, circular plate, 27 inches in diameter, with a horizontal rim about $1\frac{1}{2}$ inches wide and slightly raised. A thick and heavy ring-foot, about $2\frac{1}{2}$ inches high and 11 inches in diameter, is soldered to its back. When found, it was lying face upwards, with two of its sides badly bent and its ring-foot severely crushed at one point; but it has since been flattened out in the British Museum laboratory. The dish, as distinct from the foot, is made of a single silver sheet, which is broken at several points, and in some parts, especially on the rim, the surface has scaled off owing to corrosion, taking with it small portions of the ornament. Apart from this, however, the plate is in good condition.

Its decoration consists of geometrical ornament engraved on the surface with thin and delicate lines. There is a roundel in the centre, about 4 inches in diameter, with a composite and somewhat involved pattern. Within an eight-pointed star, formed by two squares superimposed obliquely upon each other, is inscribed a circle, which has within it again a similar star of correspondingly smaller size; inside this, at the very centre of the pattern, is a still smaller circle forming a minute medallion which contains the figure of a bird spreading its wings. The outer star and the circle enclosed in it are drawn with double lines suggesting plastic rather than geometrical shape, and are engraved with rows of running spirals, while the points of this star are filled with a kind of palmette motive, and their intervals with fleurs-de-lys which have a small spiral attached on either side. Similar motives

* I wish to express my warmest thanks to Mr C. F. C. Hawkes, who was kind enough to read this paper in manuscript and made many valuable corrections and suggestions.

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are interspersed in the empty spaces between the outer and the inner star.

At a distance of about $2\frac{1}{4}$ inches from the roundel runs a circular border, about $1\frac{1}{2}$ inches wide, subdivided by medallions into four sections. The position of these medallions is in no way related to that of the stars in the central roundel, nor are they all at equal distances from each other. The border is thus subdivided into four not quite equal sections, and each is filled with a different design. One shows a simple criss-cross pattern; the next one a frieze of interlaced ovals, each containing a fleur-de-lys inside a circle; the third one a row of confronted spirals with little leaves between them, and the fourth a meander. All these friezes are lined on either side by running spirals. The four medallions contain alternately a female figure seated on a throne with a spear in one hand and an orb in the other—a type commonly used in Roman art to personify cities—and a profile figure, running, with fluttering draperies and an uncertain object in her hands.

A similar decoration covers the rim of the dish. There are four medallions placed radially opposite those of the inner ring, all showing running figures with fluttering draperies. The criss-cross pattern of the inner ring is matched by a similar motive in the corresponding section of the rim, while the next compartment contains a frieze of intersecting circles filled with quatrefoils, and the third one, like the corresponding section of the inner ring, a frieze of confronted spirals, which, however, this time lie in double rows across the width of the frieze. The fourth section shows a repeat pattern of small quatrefoils.

On the back of the plate, inside the foot-ring, there are four control-stamps, for which however only two different stamps (PLATE X D, E) have been used. One pair is hexagonal in shape and contains a monogram based on the letter N, with an A, an E and a T inscribed and an O and a V perched on top. The monogram is flanked by two groups of two letters forming the word $\Theta\omega/MA$, while above there is a small equal-armed cross, and below a star. The other two impressions are oblong with a semi-circular top. Each contains a badly defaced but apparently beardless bust with a nimbus, flanked by the inscription $DN ANA . . . / . . . PPA$. Beneath the bust is an M-shaped monogram with other letters inscribed, amongst them an A and an N.

I will discuss these stamps first since they afford evidence of the date, and, within certain limits, also of the provenance of our piece. Exactly similar stamps are not on record, but the types are those commonly found on Byzantine silver plate of the fifth, sixth and seventh

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centuries. The ΝΑΤΟV monogram occurs on many of these pieces, and nearly always in a hexagonal stamp.¹ It is also well known from coins, on which it stands for the name of the Emperor Anastasius I.² Hitherto, however, no example of this monogram on a silver-stamp has been deciphered conclusively, since the name Justinianus offers as likely a reading of the letters as the name Anastasius. The Sutton Hoo monogram is the first of its kind that can be read, thanks to its association with the other stamp. For this contains the name Anastasius in a form which, both on coins³ and on silver stamps,⁴ is customary and recognized. The plate, therefore, was stamped, and probably also made, in the Byzantine Empire during the reign of Anastasius I (A.D. 491-518).

The name ΘΩΜΑ on the hexagonal stamp and the monogram on the oblong stamp defy all attempts at identification. But it must be remembered that the great majority of stamps on Byzantine silver plate bear names and monograms which cannot be related to any known person. We are indeed singularly fortunate here in being able to identify at least the main feature on each of the stamps, and in finding that they both refer to the same historical personage.

Plates of this size and shape are not exactly common in Early Byzantine silver work. There are but few vessels of the period with a diameter equal to, or larger than, that of this plate, the shield of Theodosius in Madrid with its 29-inch diameter being the most conspicuous amongst them. Moreover, the average Early Byzantine plate is a flat or slightly concave disc framed by some kind of plastic moulding, a form well exemplified, for instance, by the shield of Theodosius, the plates with classical figure subjects from south Russia, and those in the two Cyprus treasures. The flat raised rim of the plate occurs, however, in identical form, on two fourth-century plates in the treasures from Concesti⁵ and Petrossa.⁶ Fragments from Traprain⁷ and

¹ L. Matzulewitsch, *Byzantinische Antike*, 1929, pp. 30, 75, 111, 113, 115; M. Rosenberg, *Der Goldschmiede Merkzeichen*, 3rd ed. 1928, IV, 700, 704, 718.

² W. Wroth, *Catalogue of the Imperial Byzantine Coins in the British Museum*, 1908, I, p. 7.

³ Wroth, loc. cit. pp. 1 ff.

⁴ Matzulewitsch, loc. cit. pp. 75, 102.

⁵ Matzulewitsch, loc. cit. pl. 47.

⁶ A. Odobesco, *Le Trésor de Petrossa*, 1889-1900, pl. opposite p. 88.

⁷ A. O. Curle, *The Treasure of Traprain*, 1923, pl. 24.

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Hammersdorf⁸ probably also belonged to plates of this type. There are other related examples, but with a more strongly emphasized break between bottom and rim.⁹

The form is much more common in pre-Constantinian times; it is in fact one of the most frequent types of plate in the silver treasures of the classical Roman period.¹⁰ The pieces from Hassleben and Wettingen are outstanding examples of third-century date, while the specimens in the Hildesheim Treasure take it back as far as the first century. The plate, therefore, is based on very old traditions, and the only distinctive feature of its shape is its quite unusually high and heavy foot-ring.

As the examples of classical times show, the arrangement of the decoration on the Sutton Hoo piece is traditional for this type of plate. On most pieces, except the very small ones, we find a roundel, or *emblem*, in the centre and an ornamental border on the rim. The only part of the decoration of the Sutton Hoo plate that is not found anywhere else is the second border inserted between the roundel and the outer rim. We shall have more to say about this later on.

It is, however, only in its general scheme that the decoration of the plate invites comparison with classical pieces. Motives and style could hardly be more different. The classical examples, such as the plates from Hassleben and Karnak, have either a figure scene or a floral rosette in the central roundel, and their border ornament consists either of an acanthus scroll or else of bucolic animal-scenes interrupted at regular intervals by masks and altars. By replacing these rich naturalistic designs with an array of small scale geometrical ornaments, and by employing, moreover, an engraver's technique instead of plastic modelling the artist has produced an entirely different effect, which no longer depends on the beauty of some individual object, such as a wreath, an animal, or a human figure, but on the restless glitter of innumerable minute incisions. The figured relief has been replaced by a carpet, the plastic design by a kind of filigree pattern.

⁸ Matzulewitsch, loc. cit. p. 119, fig. 31.

⁹ Plate of Bishop Paternus (Matzulewitsch, loc. cit. pl. 26); plate from Riha (Rosenberg, loc. cit. pp. 686 f); from Stuma (*Revue Archéologique*, 1911, I, pl. 8); from Lampsacus (H. Peirce and R. Tyler, *L'Art Byzantin*, 1932, I, pl. 175); in Budapest (ibid. pl. 61 B).

¹⁰ W. Schulz and R. Zahn, 'Das Fürstengrab von Hassleben'. *Römisch-Germanische Forschungen*, 1933, VII, p. 63. Fr. Drexel, in *Bonner Jahrbücher* 1909, CXVIII, 182 ff, 189 ff, 199 ('Form 1').

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It is well known how conspicuous a part this kind of ornament, which amounts to a complete negation of all the principles of classical art, plays in Late Antique times. But in order to fix the historical position of the Sutton Hoo plate we have to trace the influence of this ornamental style on the evolution of metal-work. Incised ornament (with or without niello inlay) had existed throughout the Roman period side by side with embossed work, but it was only during the fourth century that it came into prominence. The late fourth century treasures from Traprain, Coleraine, and the Esquiline illustrate this change of fashion. They also show that by that time naturalistic ornament had frequently been replaced by geometrical designs, a development which seems to have taken place simultaneously in many parts of the Roman world. With particular reference to our type of plate we may quote the examples from Petrossa and Budapest (see above, notes 6 and 9), both of which have ornaments made up entirely of abstract motives: a fourth-century plate from Augst may also be mentioned because it is decorated with a composite pattern of circles and eight-pointed stars, very much like that in the centre of our plate.¹¹

Within this large class of Late Roman silver work with incised conventional design there is one special group which has a particular bearing on the Sutton Hoo plate. This consists of pieces with ornament so minute in scale and so tightly crowded together on a narrow space that no empty ground remains, and the individual patterns are no longer recognizable; pieces, in fact, whose decoration, like that of the Anastasius plate, recalls filigree work or very fine lace.

Such ornaments occur several times in the treasure of Traprain. Two fragments of a plate have already been quoted, because the object to which they belonged presumably resembled the Sutton Hoo piece in shape (see above, p. 42), and these fragments also offer the closest comparison for its ornament. There is, moreover, a flagon¹² with ornamental friezes very similar to those in Sutton Hoo and actually showing some of its patterns: for instance, a frieze of interlaced ovals, another of intersecting circles, and a border of running spirals. Two other silver objects with decoration in this style are the plates from Concesti and Lampsacus (see notes 5 and 9); the former has a central roundel with a design based on an eight-pointed star, and, as at Sutton Hoo, this motive is enriched by spirals and small foliate patterns. The

¹¹ W. Schulz and R. Zahn, loc. cit. pl. 34.

¹² Curle, loc. cit. p. 23.

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latter has on the rim a nielloed frieze in 'filigree style', partly composed of the same patterns as ours.

The four pieces just mentioned share yet another peculiarity with the Sutton Hoo plate, namely the medallions subdividing the ornamental borders. Even in classical times the rim-ornaments of silver vessels had often been composed in sections. Acanthus scrolls grow out of either two or four stems dividing the friezes in halves or quarters. The bucolic animal-friezes are always accentuated at regular intervals by masks in profile. But it is only in the fourth century that the dividing motive comes to consist of separate medallions. These sometimes enclose a human head and have been thought to imitate coins.¹³ But it has also been pointed out that the heads in the medallions merely take the place of the masks on the animal-friezes.¹⁴ Moreover many of the medallions, for instance those on the Traprain flagon, show idyllic figures, such as *putti*, which do not occur on coins, and the same sort of figure appears on some of the medallions of this new plate. On the other hand the Sutton Hoo plate also has two medallions with figures personifying cities, and these look indeed like the reverse of a Late Roman or Early Byzantine coin. But the most remarkable feature of the friezes of the 'filigree group' is, that except on the Concesti plate, where the intervals between the medallions are filled with animal scenes, they all show a change of pattern in every division. This fact, more than any other, brings home the fundamentally unclassical character of this class of silver vessels. When a classical artist divides the border of a plate into sections he strictly observes the rules of symmetry, and creates a perfectly balanced composition which is intended to be perceived as a whole. Here however a general view of the border leaves us with the disquieting impression of asymmetry and chaos, and instead of looking at the whole circle at once we prefer to 'read' successively one pattern after the other and are thus chased round the border in an endless flight. The circle no longer embodies calm, peace, and perfection, but perpetual restlessness.

There can be no doubt that the plate is closely affiliated to this particular group of Late Antique silver vessels, in which we find so many patently unclassical elements. It may be asked whether its style is due to the general anticlassical tendencies of the Late Roman period, or whether it is a peculiarly Eastern phenomenon.

¹³ R. Zahn, in *Amtliche Berichte aus den Königlichen Kunstsammlungen*, 1916-1917, xxxviii, col. 29.

¹⁴ Fr. Drexel, in *Bonner Jahrbücher*, 1909, cxviii, 183.

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The group of metal-work with 'filigree' decoration is too small for final decision, but there can be no doubt that there are reasons for regarding it as purely Eastern. One plate comes from Lampsacus, that is to say from the immediate neighbourhood of Constantinople, another from south Russia, the principal export country for the Byzantine metal industry. The new plate has Byzantine stamps, and thus not only forces us to disregard the fact that it comes from a Western site, but also invalidates what significance the pieces from Traprain might otherwise have in this connexion as Western finds. If the famous little escutcheon in Athens¹⁵ really were of second-century date it might be argued to represent an oriental forerunner of this Late Antique group, and would thus give added force to the oriental theory. But it is much more probably Late Antique itself and it is just another member of the same family.¹⁶

The problem is complicated by the existence of a group of gold ornaments in openwork technique with very close relations to our type of silver-work. Openwork technique came into vogue during the second century and reaches its most elaborate stage during the fourth and fifth.¹⁷ At that time we find patterns based on some geometrical figure, which is however rendered almost unrecognizable through a mass of small scroll and spiral motives filling all the available space between and around its outlines, so that we perceive nothing but a rich and highly complicated pattern of small and delicate gold fillets against a dark background. These works are parallel, in a different technique, to our silver vessels. There is a pendant in Berlin¹⁸ with a medallion of the Emperor Honorius enclosed in an openwork frame which, like the roundel in the centre of the Sutton Hoo plate, is decorated with an eight-pointed star interspersed with scroll motives which transform the plain geometrical figure into a rich and complicated all-over pattern. Even the star itself is covered with an openwork design so that there is no coherent metal surface left at all. On the plate the same effect is achieved by covering the star with an ornament of running spirals. Related to the Honorius pendant is a group of bracelets also with highly intricate openwork patterns, which are arranged in sections each with a different design and separated from the

¹⁵ O. M. Dalton, *East Christian Art*, 1925, p. 386.

¹⁶ Cf. Fr. Drexel, in *Germania*, 1925, IX, 126 n. 17.

¹⁷ A. Riegl, *Spätrömische Kunstindustrie*, 1901, I, 140 ff. R. Zahn, loc. cit. (note 13) col. 17 ff.

¹⁸ R. Zahn, loc. cit. col. 29.

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adjoining one through a metal disc. The obvious parallel these bracelets afford to the arrangement of the border ornaments on the plates of our type has been pointed out by Zahn.

Now it is important to note that this group of gold ornaments, so closely related to the Sutton Hoo silver-work, has been thought to be perhaps of Gaulish origin.¹⁹ While it is impossible to settle this problem within our present context, it must at least be noted that the 'filigree style' in metal-work may not have been confined exclusively to the eastern part of the Roman Empire. Although perhaps first introduced in Byzantium, it may have emerged in the West almost simultaneously. In the fourth century the Roman world was still sufficiently uniform to justify us in speaking of an international style. And if we leave our special group and consider quite generally metal-work with incised conventional patterns, we find that the style was certainly taken up by local craftsmen in the West at an early date. It is true that some authorities regard all the silver vessels with this type of ornament, for instance the specimens in the Traprain and Esquiline treasures, as oriental. But the fourth-century British pewter vessels are unassailable proof of the employment of this type of ornament by local craftsmen in the extreme West.²⁰

It must in any case be agreed that the frequent occurrence of geometrical designs on metal-work represents only a special case within a tendency which became noticeable in the decorative art of all Roman provinces during the fourth century; a tendency towards small-scale conventional ornament delicately drawn and often arranged as repeat patterns in carpet style. The Coptic tapestries with geometrical designs in purple and white, which have recently been shown to belong to that date,²¹ and some of which, incidentally, show patterns very much like those on the British pewter vessels, are evidence of this general tendency in Late Roman art, no less than the mosaics in the vaults of Sta. Costanza in Rome with their panels of small-scale repeat patterns.²²

This is the wider background to the style of the plate. It is rooted in a development in Late Antique art which took place during the fourth century and reaches its climax about A.D. 400. The Traprain

¹⁹ R. Zahn, loc. cit. col. 35 ff.

²⁰ Cf. *Archaeologia*, LVI, 9.

²¹ L. M. Wilson, *Ancient Textiles from Egypt in the University of Michigan Collection*, University of Michigan Studies, Humanistic Series, 1933, XXXI, nos. 73, 76, 79, 105, 109.

²² M. van Berchem and E. Clouzot, *Mosaiques Chrétiennes du IV^e au Xe siècle*, 1924, pp. 2 ff.

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treasure is dated through its coins to the early fifth century. The plate from Concesti is thought to belong to the period about A.D. 400, a point which is of particular importance since this is the only piece which combines style and arrangement of the Sutton Hoo ornament with a wholly identical type of plate. The type was very common in the earlier centuries, but we have not been able to produce an exact parallel later than A.D. 400. The Lampsacus plate, important for us on account of its border ornament, has in its centre a piece of figure relief which has all its stylistic parallels in the period of Theodosius and Honorius. The Honorius pendant dates from the late fourth century and so do the openwork bracelets. So much for the immediate parallels, but the same applies to all the other pieces adduced for comparison.

After that period the style went out of fashion. In A.D. 400 silver plates with large-scale embossed reliefs exist side by side with those with minute conventional ornament faintly incised. By 500 the former completely dominate the scene,²³ and even where there is no figure-work the surface is covered by but few motives boldly designed (cf. *e.g.* the plate of Paternus). One of the plates from Cyprus²⁴ has an ornamental frieze of our type, but merely as a border for a monumental human figure. The gold ornaments of the sixth century, although still frequently executed in openwork technique, show a single conventional pattern and no longer that interplay of different motives which constitutes the peculiarity of works like the Honorius pendant.

How does this agree with the stamps on the Sutton Hoo plate, which, as we saw, date from the time of Anastasius? There is, of course, the possibility that the plate was made about 400 and not stamped until a hundred years later. Many Byzantine silver vessels were at one time thought to be much older than their control-marks, and although most of them have since been shown to be contemporary, the stamps having been applied when the vessels were not yet quite finished, it would be difficult to prove that this was necessarily the case here. For the argument is conclusive only where the stamps can be shown to have been damaged in the process of embossing the relief decoration. In a case like ours, where there is no embossed ornament, this technical criterion cannot be used.

²³ Cf. the silver vessels which by evidence of their stamps date from the time of Anastasius, or, at latest, Justinian: see above, notes 1 and 4.

²⁴ O. M. Dalton, *Catalogue of Early Christian Antiquities in the British Museum*, 1901, no. 398.

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The plate can, however, quite easily be genuinely dated to the time of Anastasius by its stamps, provided we assume that it was made by a very conservative artist. The general character of its ornament makes it, in fact, very likely that it was copied rather mechanically and hastily from a time-honoured pattern-book without due consideration for the context for which the patterns were originally intended. The plate is really much too large for such minute and delicate patterns. In the middle of a vast, empty space we find a mass of patterns of almost microscopic size all crowded together in a roundel only 4 inches in diameter. The artist himself was aware of the absurdity of this arrangement, but too much hampered by tradition and convention to invent a bold large-scale design in keeping with the dimensions of the plate. He could see no better way of solving his difficulty than to insert halfway between the centre and the border, a repetition of the border ornament. We said before that no other example is known of such a frieze, whose place on a plate is clearly on the rim, being duplicated, and the whole arrangement looks very much like a makeshift devised by a silversmith who only had a limited number of set patterns at his disposal.

He drew his designs as best he could without troubling to co-ordinate the ornaments in the centre with those in the two outer rings. The eight-pointed star and the bird in the roundel lie unhappily at an oblique angle to the radii formed by the medallions of the border friezes. These radii themselves do not form right angles with each other. The execution of details also shows signs of untidiness. This is not the work of a pioneer, but of some back-street artisan, clinging to old formulae, very possibly at a time when better artists had already abandoned them.

The plate from Cyprus mentioned above shows that our type of decoration was still known to metal-workers even at a time considerably later than that of Anastasius. It is therefore perfectly possible that an artist of about A.D. 500, who made no particular claim to originality, used it as his only design. What may be questioned, however, is whether such an old-fashioned piece can have been made in Constantinople itself. Many authorities are naturally inclined to think that Byzantine silver vessels with imperial control-stamps are most likely to come from the capital. Indeed, on the correctness of this assumption all the theories regarding the distribution of the early Byzantine schools of metal-work depend; but it must be admitted that so far it is nothing more than a hypothesis, and one, moreover, weakened rather than strengthened

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by a piece like this at Sutton Hoo which combines the imperial control-stamps with what must be described as a back-water style. We must reckon with the possibility that other towns in the eastern Roman world also exercised the imperial control, and all that can be safely said is that the plate comes from within the limits of the Byzantine Empire.

If we draw a distribution-map of silver plate with Byzantine stamps we find that the great majority of them have come to light round the eastern Mediterranean—in Syria, Cyprus, and Asia Minor—or else in south Russia and on the lower Danube, countries to which the Byzantine export trade chiefly flowed. With the exception of a reliquary in the treasure of Sancta Sanctorum in Rome²⁵ no stamped pieces had previously been found in the West, the two plates from Valdonne²⁶ being probably both local imitations. The Sutton Hoo plate is in any case unique as a demonstrably Byzantine work which found its way—through channels at which we can only guess—to the extreme northwest of Europe.

THE BOWL WITH THE CLASSICAL HEAD (PLATES V, XIV)

We next turn to a much smaller vessel, which was found buried underneath the Anastasius dish, a bowl, 15 inches in diameter, with fluted sides, a narrow, horizontal rim and a flat bottom which is embossed in low relief with a female profile head surrounded by a conventional foliate frieze.

Date and provenance of this piece are difficult to determine. Its decoration suggests a relationship with Mediterranean work, but it is clearly not of the same origin as the large dish, for it is far more severe in style and lacks the overflow of ornamental motives characteristic of that piece. But it has no obvious connexion with any known type of Late Antique metal-work.

It is difficult even to find a parallel for its shape. Fluted bowls are common enough in Late Antique times, for instance, among the third-century bronze vessels found in great quantities in lower Germany and Scandinavia, which are thought to be ultimately derived from glass and metal vessels such as occur in Pompeii.²⁷ But none of these Roman pieces has exactly the same shape as the bowl at Sutton Hoo.

²⁵ Rosenberg, loc. cit. p. 706 f.

²⁶ Rosenberg, loc. cit. pp. 736 ff. ; R. Jaeger, in *Jahrbuch des Deutschen Archaeologischen Instituts*, 1928, Anzeiger, XLIII, col. 561 f.

²⁷ G. Ekholm, in *Acta Archaeologica*, 1935, VI, 71 ff. O. Brogan, in *Journal of Roman Studies*, 1936, XXVI, 210.

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Perhaps its comparatively closest analogy is provided by a bowl in the Traprain treasure,²⁸ which has all the elements of this piece, although it is proportioned in a different way and its flutings are curved and not straight. The Sutton Hoo specimen might be a simplified version of this type of bowl. After the end of the fourth century fluted vessels became less common, although several pieces in the treasure of Nagy-Szent-Miklas show that, in the barbaric sphere at least, the type survived into much later centuries.²⁹

Unfortunately the decoration does not lead us much further. To take the foliate ornament first, it presents itself as a version of the Lesbian *kymation* of classical times enriched by small three-petalled flowers in the trefoil-shaped intervals between the leaves. This is a form known from the architecture of the early imperial period³⁰, a date with which the crude and decadent workmanship of this piece certainly does not agree. In its further evolution the Lesbian *kymation* was transformed out of recognition, as may be seen from the type series published by Weigand.³¹ In the third- and fourth-century examples the character of a foliate frieze is completely lost. Since, however, this is the earliest possible date for the hard, linear style of the bowl, this ornament must be explained as a studied attempt to return to the true classical manner at a time when it had already died out. The figure-head in the centre of the bowl tells the same story. Only an artist working in a retrospective classicizing manner could have combined genuine classical features such as the straight profile, the head-dress, and the sharp break at the neck, with such a conventional execution of detail and a total lack of expression.

Such classicizing tendencies developed in Rome towards the end of the fourth century, at the time of the last Pagan reaction against the victorious Church, as may be seen on several consular diptychs of that period; and there are also a number of Christian objects influenced by this 'Renaissance', e.g. Projecta's Casket in the British Museum and the famous ivory panel from the Trivulzio Collection with the Women at the Sepulchre.³² The latter has a Lesbian *kymation* of classical type but not identical with ours. If the bowl is a Western work it would be most likely to belong to this period. In Byzantium, on the other

²⁸ Curle, loc. cit. pl. 35.

²⁹ Riegl, loc. cit. 1923, II, pls. 40, 41, 43.

³⁰ C. Weickert, *Das lesbische Kymation*, 1913, pl. x, a, b.

³¹ *Jahrbuch für Kunstwissenschaft*, 1924, II, 166.

³² A. Venturi, *Storia dell'Arte Italiana*, 1901, I, 79.

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hand, the classical tradition never died out, as is shown by the numerous silver vessels of the sixth and seventh centuries with classical figure scenes and ornaments.³³ A silver amphora from Poltawa³⁴ has a *kymation* not unlike the Sutton Hoo example. But the classicism of Byzantine works, due to an unbroken Hellenic tradition, is less studied and academic, and the head on our bowl has little in common with the delicately modelled figures on these Eastern reliefs. They are often less elaborate and exact in detail, but they are made with a much greater knowledge of human anatomy and produce the illusion of a living body and its richly undulated surface. The dry and lifeless manner of this head is more in keeping with those earlier Roman works, and one of the priestesses on the diptych of the Symmachi and Nicomachi³⁵ may be quoted as showing a head related in type, as well as in academic coolness, although the workmanship is much better.

But neither the Roman 'Renaissance' of A.D. 400, nor the Byzantine classicism of the sixth and seventh centuries, provides any really good parallels for this bowl, and the questions of its date and provenance remain undecided. Perhaps its singularly sterile and crude character could be more easily explained by assuming that the bowl is of provincial origin and not directly connected with the stylistic movements in any of the big centres.

[THE SET OF SMALL BOWLS (PLATES XIII, XIX)]

The third important item amongst the objects of silver is a set of nine bowls, all of identical size and type. They were found as a nest standing one on top of the other, and one of them had been entirely reduced to silver chloride, while of another one only a few badly corroded fragments have survived. But the others are in good condition. They are shallow circular bowls, about 9 inches in diameter, and without foot or rim. The decoration in each case consists of an equal-armed cross inscribed into the inside of the bowl, its arms formed by rows of a chased star-pattern, its centre by a circular ornament which varies in every second piece. Two have a six-pointed star, two others a gadrooned rosette surrounded by a *kymation*, a third pair a wheel-rosette surrounded by what is perhaps a debased version of the classical

³³ Matzulewitsch, loc. cit. *passim*.

³⁴ Ibid. pl. 28.

³⁵ Victoria and Albert Museum, *Catalogue of Carvings in Ivory*, part I, 1927, frontispiece.

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egg-and-dart motive, while the seventh piece shows a similar rosette but unframed.

Whether this type of bowl goes back to classical origins is difficult to say. A vessel of similar shape, but with a foot-ring, occurs in the treasure of Berthouville, a Gaulish find dating from the third century,³⁶ and in any case it was known in the eastern Mediterranean region during the Early Byzantine period, for there are two bowls of the same shape in the treasure from Lampsacus.³⁷ These resemble the Sutton Hoo bowls even in having a decoration in the shape of an equal-armed cross inside the bowl, which in this case however consists merely of gilt stripes with incised outlines. One of the bowls from Lampsacus has Byzantine control-stamps.

The Sutton Hoo vessels, however, are not altogether in the ordinary line of Byzantine silver. The star-pattern is not known there, nor is the wheel-rosette a common Early Byzantine motive. The bowls, in fact, occupy a curious position halfway between the Byzantine sphere and another which may be described as either oriental or barbaric; or rather, we may notice within our set a development from one style to the other. The two bowls with six-pointed stars in the centre are reminiscent of some of the Late Roman and Early Byzantine plates with incised geometrical ornament which we quoted in connexion with the Anastasius dish. For the decoration in these two cases is drawn with very delicate and slightly intermittent lines, and is hardly embossed at all. The star-pattern, moreover, is not quite so developed, and more like the simple quatrefoil pattern so frequent on the silver vessels from Traprain, from the Esquiline, etc. (cf. FIG. 4 a, b). The six-pointed star, too, is a common Late Antique motive.³⁸ All the other bowls show a more distinct, although still very flat relief and more clearly defined outlines. There are two more pieces with a central design of an ordinary Late Antique type, namely a gadrooned rosette surrounded by a foliate frieze. But the remaining three have the wheel-rosette, a very old oriental design which although frequently employed in classical art is hardly ever found there in the same shape as here, and two have in addition a pattern which may be a very debased version of the egg-and-dart motive. In this last-mentioned pair we notice, moreover, a tendency to let the ornament sprawl over the surface of the plate and the classical elegance and restraint of the first two pairs have disappeared.

³⁶ E. Babelon, *Le trésor d'Argenterie de Berthouville*, 1916, pl. 28.

³⁷ O. M. Dalton, loc. cit. (note 24), nos. 378, 379.

³⁸ R. Zahn, loc. cit. (note 13), col. 32 f.

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But the most significant change is that which takes place in the pattern on the cross-arms. In the first two pieces (FIG. 4 b) small leaves had been inserted in the angles between the quatrefoils, which slightly obscured the geometrical character of the Late Roman design on which the pattern is based. In all the other bowls (FIG. 4 c) these small leaves are linked up with each other so as to form small four-petalled flowers in the lozenge-shaped intervals on either side of each quatrefoil, and halves of such flowers are inserted in the triangles above and below. The quatrefoils themselves have received a surface-modelling which seems to characterize them as leaves rather than purely abstract designs. The effect, in fact, is that of a row of leaves and blossoms conventionally arranged.

When and where did the artists live who based their work on Late Antique and Early Byzantine models only to change their entire character as they went on? The wheel-rosette might suggest an oriental border country, such as Coptic Egypt, where related examples are known,³⁹ but examples very similar to those at Sutton Hoo also occur on nielloed silver plaques from Hungary.⁴⁰ And the 'floral' star-pattern does not seem to occur in the Orient at all. It is true that the step from the simple quatrefoil pattern, so common in Late Roman art, to this more elaborate form is not very great and may have been taken independently in any region in which Roman models were available. There are, for instance, little flowers in the intervals of the stars on one fragment at Traprain,⁴¹ and the same occurs on a Roman bronze plaque from Hungary.⁴² But at the same time it is a curious fact that the closest parallel to these friezes is provided by some of the gold vessels in the treasure from Nagy-Szent-Miklas.⁴³ The possibility of a common origin cannot be excluded.

In a recent study on the treasure of Nagy-Szent-Miklas⁴⁴ an analysis of the very pattern we are interested in has been used to show that all the vessels are not of one and the same style, but reflect a progressive development towards an ever more unrestrained barbaric manner, a

³⁹ Cf. Book-covers in New York. (*A check-list of Coptic Manuscripts in the Pierpont Morgan Library*, 1919, pl. II) and Vienna (Th. Gottlieb, *Bucheinbände*, 1910, pl. I). For the date of these covers cf. *The Library*, 1933, XIII, 7; 1938, XIX, 203.

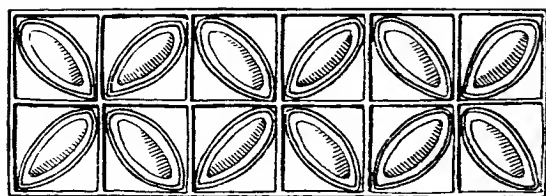
⁴⁰ H. Peirce and R. Tyler, *L'Art Byzantin*, 1932, I, pl. 64.

⁴¹ Curle, loc. cit. p. 83, fig. 63.

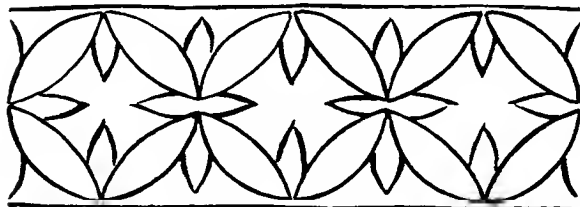
⁴² Riegl, loc. cit. I, pl. 20, 4.

⁴³ Riegl, loc. cit. II, pls. 31 f., 36 ff.

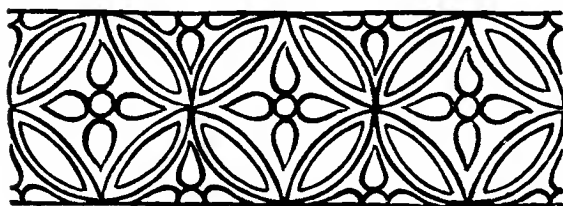
⁴⁴ H. Schüller, in *Archaeologiai Ertesítő*, 1937, pp. 116 ff., 217 ff.



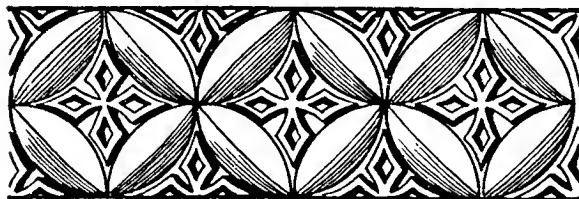
a



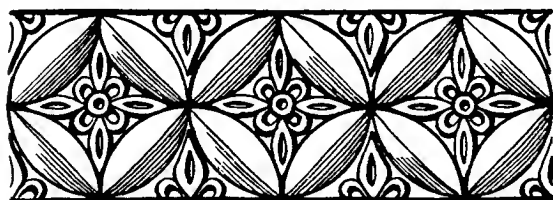
b



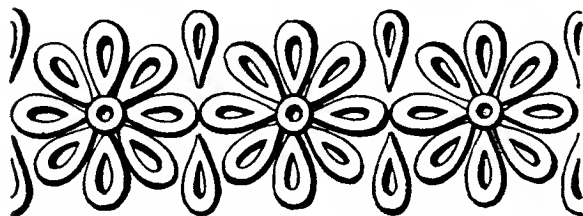
c



d



e



f

FIG. 4. QUATREFOIL AND STAR PATTERNS: (a) TRAPRAIN; (b, c) SUTTON HOO BOWLS; (d, e, f) NAGY-SZENT-MIKLAS (see pp. 53-6)

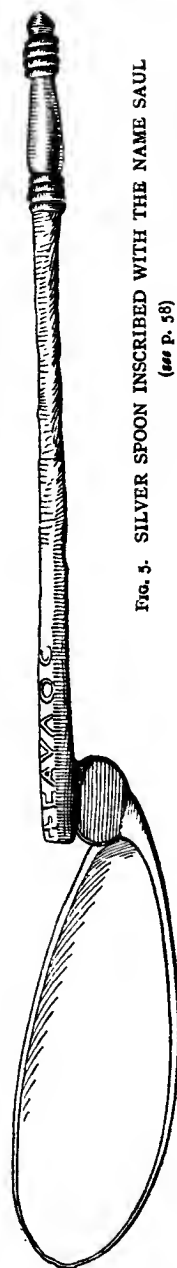


FIG. 5. SILVER SPOON INSCRIBED WITH THE NAME SAUL
(see p. 58)

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development which, in the author's opinion, may have taken some considerable time. The development which we observed within the set of plates from Sutton Hoo may be a warning against interpreting such stylistic changes within an outwardly uniform set of vessels in terms of chronological differences ; in fact, the Sutton Hoo bowls, which are certainly all of one period, show that the style of a craftsman, or a group of craftsmen, may undergo certain transformations as the work goes on. But this does not alter the fact that the goldsmiths who made the vessels of the Hungarian treasure displayed an increasing tendency towards turning the star-pattern into a floral ribbon, and this is the same tendency as that observed in Sutton Hoo, or rather, the artists of Nagy-Szent-Miklas begin where those of Sutton Hoo leave off (FIG. 4 d, e, f). We can arrange an evolutionary series starting with the classical quatrefoil pattern. Taking the first pair of our bowls as the first step towards floral interpretation, and the other pieces from the set as the second, we find that this is exactly the stage at which the evolution in the Hungarian treasure sets in, and it is then followed up with other versions of the same pattern which are even more outspokenly floral. This uniformity of purpose we may, with all due precaution, take as an argument in favour of a historical connexion between Sutton Hoo and Nagy-Szent-Miklas. We may add that the star-pattern of the Nagy-Szent-Miklas vessels has often been said to be derived from the Late Roman quatrefoil, but a link between the two has never been supplied.

The vessel in the Hungarian find which provides the closest parallel to the ornament on the bowls is a jug of Sassanian type⁴⁵, and it would therefore not be unreasonable to assume that it was in Sassanian art that the change from the quatrefoil-pattern to the star-pattern originally took place. The Sutton Hoo bowls on this reasoning might be Sassanian. But it so happens that the star-pattern is the only detail which the Hungarian vessel does not share with its Persian prototypes, nor does it seem to occur anywhere else in Sassanian art. We are therefore forced to conclude that this detail is peculiar not to the prototype used by the goldsmiths of Nagy-Szent-Miklas but to these artists themselves, and represents their own artistic tradition. Thus granted that there is any connexion between Nagy-Szent-Miklas and these bowls, the latter would have been made by the same people, and would represent that tradition of ornamental design which enabled them to add an original contribution to their Sassanian models. It

⁴⁵ Riegl, *loc. cit.* II, pl. 32.

PLATE XVII



BOTTOM OF THE LARGE SILVER DISH (TYPE A) IMMEDIATELY AFTER REMOVAL, WITH SILVER CUP IMPALLED ON FOOT-RING (see p. 40)

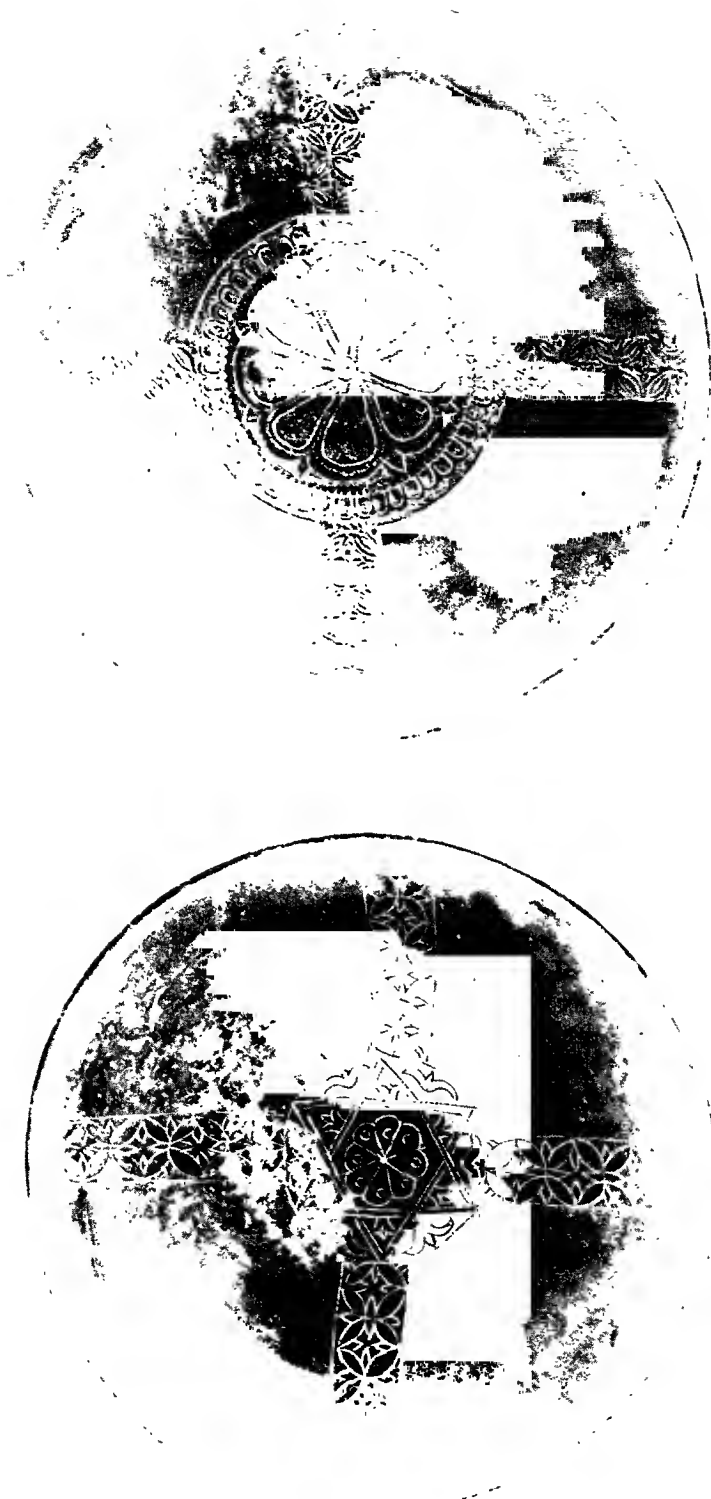
Ph O G S Crawford

PLATE XVIII



THE LARGE SILVER DISH OF ANASTASIUS I SHOWING DETAILS OF THE ORNAMENT (see pp. 3, 18, 10, 69)
ON THE BACK ARE FOUR CONTROL-STAMPS (see p. 28 and PLATE X, 10 and 11)

Ph. O. G. S. Crawford



TWO OF THE SMALL SILVER BOWLS WITH GEOMETRIC DECORATION (see pp. 3, 16, 32 and PLATE VII)
By permission of the British Museum

PLATE XX



THE GOLD CLASPS (see pp. 16, 28-9) — PART OF THE SWORD IS ON THE LEFT
Ph. O. G. S. Crawford

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has always been recognized that the artists of the Hungarian treasure were under strong Late Antique and Byzantine influence,⁴⁶ and the shapes of their bowls are due particularly to Byzantine models.⁴⁷ Sutton Hoo would show us the barbaric craftsmen in the process of their first emancipation from Late Antique models, while Nagy-Szent-Miklas would illustrate the more developed and sophisticated stage they thus achieved.

It must be admitted that we have ventured far into the realm of speculation, and it is perhaps advisable not to add to the vigour of the opposition which such dangerous thoughts are bound to arouse by stirring up the hornets' nest of problems which conceals the identity of the people who made the treasure of Nagy-Szent-Miklas. But most authorities are now inclined to credit the Avars with this work, while the dates given vary between the late sixth, the seventh, and the eighth centuries.⁴⁸

Our group of vessels, if not due to the same people, must at any rate have been made by barbaric craftsmen who, like those of Nagy-Szent-Miklas, shaped their vessels after well-known Mediterranean or Eastern prototypes, but with regard to ornamental details allowed themselves to be carried away by their own taste and imagination. Apart from their connexion with the Hungarian treasure the bowls seem to offer no clue as to the country where this may have happened, but in any case they are not likely to be west or northwest European, since neither shape nor ornament can be matched there. Like the other silver vessels they must have come from far afield.

Their date is hardly earlier than A.D. 600. This is the period of the Lampsacus treasure, which, as we saw, includes two bowls of the same type; we may also note that the jug in the Nagy-Szent-Miklas treasure which offers the closest comparison to the bowls has recently been connected with Sassanian work of the time of Khusrau II (590-629).⁴⁹ While the Hungarian finds thus warn us against ascribing too early a date to the Sutton Hoo bowls, these bowls, owing to the *terminus ante* of about 650 which applies to the whole of the Sutton Hoo burial, may in turn serve as an argument against giving too late a date to at least certain components of the Nagy-Szent-Miklas treasure.

⁴⁶ Cf. e.g. N. Fettich, *Die Metallkunst der landnehmenden Ungarn*, 1937, p. 272.

⁴⁷ Riegl, loc. cit. II, 97.

⁴⁸ N. Fettich, loc. cit. pp. 272 f; T. Horvath, *Die avarischen Gräberfelder von Üllö und Kiskörös* 1935, pp. 118 f; H. Schüller, loc. cit. p. 226.

⁴⁹ H. Schüller, loc. cit. p. 226.

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THE SPOONS

The treasure further includes two silver spoons of a well-known type. They are 10 inches long and have a pear-shaped bowl attached by means of a solid disc to a handle which is square at the end nearest to the bowl, but changes to a round shape, terminating in a baluster-moulding. The square parts of the handles are inscribed in niello with the names +ΠΑΥΛΟC and +ΕΛΛΑC (FIG. 5) respectively.

In the late Roman and earliest Christian treasures we commonly find spoons of a somewhat different type, namely with a plain, or sometimes fluted handle ending in a point, while the disc connecting the handle with the bowl very often takes the shape of a pierced spiral. This is the usual form of the silver spoons of the fourth century,⁵⁰ which, incidentally, all seem to come from Western sites. As opposed to this our pieces belong to a group of spoons with solid discs and heavier and more elaborately moulded handles, perhaps derived from earlier classical shapes. Of this type, which occurs chiefly in the eastern Mediterranean region, several varieties are known, well represented by the treasures from Cyprus⁵¹ and Lampsacus⁵². The pieces closest to ours are the following: one from Syria,⁵³ one from Gallipoli in Smyrna,⁵⁴ several in the Lampsacus treasure,⁵⁵ one from Cairo,⁵⁶ perhaps also one of the spoons in a treasure from Canoscio⁵⁷ which may be either Byzantine or an Italian copy of a Byzantine type.

The spoons from Gallipoli, Syria, and Lampsacus have on their discs monograms of the 'double-bar type' (usually based on an H, an M, or an N), which is a customary type of monogram until about the time of Justinian, when it gradually begins to be replaced by the cross-shaped monogram.⁵⁸ This provides a *terminus ante* for our type

⁵⁰ To quote more or less datable examples only: *Antiquaries Journal*, 1922, II, 90; Curle, loc. cit. p. 64 ff; O. M. Dalton, loc. cit. nos. 322 ff.; Cl. Boulanger, *Le Mobilier Funéraire*, 1902-1905, pls. 8, 20.

⁵¹ O. M. Dalton, loc. cit. nos. 400-24.

⁵² Ibid. nos. 380-92.

⁵³ *Syria*, 1926, VII, pl. 23

⁵⁴ F. Cabrol and H. Leclercq, *Dictionnaire d'Archéologie Chrétienne*, III, 2, 1914, fig. 3454.

⁵⁵ O. M. Dalton, loc. cit. nos. 387-91

⁵⁶ J. Strzygowski, *Koptische Kunst*, 1904, p. 322, no. 7188.

⁵⁷ *Rivista d'Archeologia Cristiana*, 1935, XII, 323.

⁵⁸ E. Weigand, in *Byzantion*, 1931, VI, 412; and in *Jahrbuch des deutschen Archaeologischen Instituts*. 1937, LII, 129 f.

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of spoon. On the other hand it is not likely to be earlier than the sixth century, to which period the Lampsacus treasure as a whole seems to belong.⁵⁹

Name-inscriptions are common on Early Christian and Early Byzantine spoons, and it was at one time a highly controversial subject whether they referred to owners or to saints. It is quite obvious that some of the spoons, especially of the above-mentioned fourth-century type, bear names of owners. But it is equally indisputable that others refer to saints, for we have a set of spoons from Syria which are explicitly dedicated to various apostles and evangelists, the words being: +ΕΥΑΓΓΕΛΙΑ ΤΟΥ ΑΓΙΟΥ ΠΑΥΛΟΥ (ΠΕΤΡΟΥ, etc.)⁶⁰ It is therefore probably more than pure chance that the names inscribed on a group of spoons in the Lampsacus treasure also coincide with those of apostles and evangelists,⁶¹ and apart from these there are at least two isolated finds of spoons with names of apostles.⁶² There can be little doubt then that in our case the inscriptions refer to Paul the Apostle.⁶³

It remains to be asked, however, what purpose these spoons were intended to serve. They are often thought to have been used for liturgical purposes, and the fact that they are sometimes inscribed with sacred names seems to support this view. The new find, however, presents difficulties in this respect, for the Saint's pre-apostolic name Saul would hardly have been inscribed on a liturgical object. We are confronted with the task of finding a meaning for these spoons which is not liturgical and yet not altogether profane, and the best solution seems to be to regard them either as votive gifts to a church or as pilgrims' souvenirs of some sacred place.

⁵⁹ The treasure also includes a number of spoons with cruciform monograms (see below, n. 63), and therefore seems to belong to the transition period from one type to the other. The two bowls referred to above (note 37) also have cruciform monograms.

⁶⁰ *Syria*, 1930, XI, 210 ff.

⁶¹ O. M. Dalton, loc. cit. nos. 380-4.

⁶² *Bullettino d'Archeologia Cristiana*, 1878, p. 119 (Crema); Cabrol-Leclercq, loc. cit. fig. 3455 (Sasbach).

⁶³ The inscriptions on the spoons from Lampsacus have recently been discussed by Weigand (*Byzantinische Zeitschrift*, 1939, p. 136). While accepting the theory that they refer to saints, he points out that the omission of the words Ο ΑΓΙΟΣ is a sign of a date earlier than that given by Dalton ('6th-7th cent.') and he would undoubtedly use the same argument in the case of our spoons. But it so happens that the spoons from Lampsacus concerned have cruciform instead of 'double-bar' monograms, a form which Weigand himself has shown to belong to the period of Justinian at the earliest (see note 58).

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As regards the first possibility, we know that spoons were frequently given to churches, mostly as part of larger gifts of silver plate. It seems that in the West these gifts were frequently made up of old silver, not of new pieces especially made or at least inscribed.⁶⁴ In the East, on the other hand, we have spoons with inscriptions which clearly characterize them as votive gifts to some particular saint.⁶⁵ Nevertheless there is also the possibility of spoons having served as pilgrims' souvenirs, and in this connexion we must return once more to the above-mentioned set of spoons from Syria. 'Eulogia' is a word of many meanings, but the archaeologist is first reminded of the pilgrims' ampullae which often bear analogous inscriptions,⁶⁶ and we may therefore ask whether these spoons were also souvenirs of holy places.⁶⁷

Apart from leaden ampullae of the type best known from the treasures of Monza and Bobbio there are two main groups of ampullae in Early Christian times, the Menas ampullae, chiefly found in Egypt, and another group, almost exclusively confined to Asia Minor, which frequently shows portraits, and sometimes name-inscriptions, of apostles and evangelists.⁶⁸ This group is perhaps in some way connected with the cult of the twelve apostles, which had its centre in the Church of the Apostles in Constantinople.⁶⁹ It is a curious fact that, except for those which obviously refer to private persons, nearly all the names occurring on the spoons, including those on the set from Syria, are those of apostles or evangelists, and it is tempting to regard them as a parallel in a more precious material to the little terracotta flasks.

Again we have strayed far from the field of ascertainable facts, but this possibility seemed worth recording, and in its light new significance may be attached to the observation that in the records of the seventh century we more than once find references to sets of twelve spoons.⁷⁰

⁶⁴ Cf. the plates given by Desiderius, Bishop of Auxerre, to the church of St. Stephen in that town (see *Bonner Jahrbücher*, vol. cxl, p. 83 f.); these were mostly decorated with secular subjects and must have been of private origin. The gift also included a large number of spoons; some even 'habent caudas scriptas'.

⁶⁵ Cf. *Syria*, 1926, VII, 110 ff.

⁶⁶ Cf. e.g. Dalton, loc. cit. no. 876: ΕΥΛΟΓΙΑ ΤΟΥ ΑΓΙΟΥ ΜΗΝΑ.

⁶⁷ Cf. Diehl's remarks in *Syria*, 1930, XI, 210 ff.

⁶⁸ O. Wulff, *Altchristliche und mittelalterliche Bildwerke*, 1909, I, 263 f. E. Michon, in *Mémoires de la Soc. Nat. des Antiquaires de France*, LVIII, 315 ff.

⁶⁹ Names of evangelists frequently figure in Eastern apostle lists. Cf. e.g. A. Heisenberg, *Grabeskirche und Apostelkirche*, 1908, II, 23 ff, 208 ff.

⁷⁰ Cf. *Bonner Jahrbücher*, cxl, pp. 84, 87.

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Since both our spoons refer to one and the same apostle they can hardly have formed part of such a set, but it is quite possible that, at a sanctuary devoted to all the twelve pious apostles, pilgrims singled out the Apostle of the Gentiles for special worship.

A number of small silver objects remain to be mentioned. There is a cup, or ladle, 2 inches high, with the bottom narrowed in and decorated on its side with beaded borders and a row of gilt triangles. To this cup belongs a flat handle with a hinged ring-terminal which was fixed in a horizontal position to the rim, where a break is still visible. We may recall the Coptic bronze ladles of similar shape.⁷¹ There is also a small bowl, $3\frac{1}{4}$ inches in diameter, with a foot-ring which is now loose, and a pair of drop-handles each attached to two escutcheons, which are said to have been fastened to a large leather bag (PLATE XXI), but are likely to have belonged, at least originally, to a silver vessel. They may be compared to a pair of handles in the Esquiline treasure.⁷²

CONCLUSION

All the silver objects here discussed have suggested comparisons with foreign material. No piece could be proved to be of native workmanship, and from the point of view of Anglo-Saxon archaeology these finds are only important in so far as they give us quite a new idea of the manifold and far-flung foreign connexions of a seventh-century East Anglian potentate. But it is difficult to say how these objects reached England and whether they came here through the ordinary channels of trade, or as loot, or as gifts from foreign rulers.

The royal families of England had at that time direct connexions with the Mediterranean countries. The popes sent presents to the kings and queens.⁷³ Moreover the English rulers were in close touch with the Merovingians, and in France Late Antique and Byzantine silver must have abounded. The description of the vessels given by Desiderius of Auxerre to a church of his town⁷⁴ reminds us at once

⁷¹ *British Museum Quarterly*, XIII, pl. 49A. Cf. J. Strzygowski, loc. cit. pl. 28, no. 9061.

⁷² *British Museum Quarterly*, XIII, pl. 49B. Cf. Dalton, loc. cit. no. 345.

⁷³ Bede, *Historia Ecclesiastica*, I, 32; II, 10, 11.

⁷⁴ See above, note 64.

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of the Byzantine pieces with classical figure-subjects found in such great quantities in south Russia and elsewhere.

It is, however, equally possible that these objects came to England not as gifts but through trade, as was undoubtedly the case with the Coptic bronze vessels which are found so frequently in Saxon graves and of which the burial includes at least a local imitation. Here, too, France, and also Germany, acted as intermediaries. Our pieces suggest mass-production rather than great individual effort and are quite likely to have been imported by merchants. As for the bowl with the female head and the set of nine bowls, which seem to come from some rather obscure provincial or even barbaric country far away from England, trade is much more likely to have brought them here than any more personal relationship. The large dish may also have been a trade object, and in any case the stamps it bears by no means indicate, as has been suggested, that it was originally a present from the Emperor Anastasius himself. This implies a misconception of the function of these control-stamps, which are a matter of bureaucratic routine rather than a personal signature of the Emperor. Moreover, we saw that its artistic merits are not such as to make it appear a suitable token of imperial favour. Under these circumstances it not only is unnecessary to trace any personal connexion between the Emperor Anastasius and the royal family of East Anglia, though through King Clovis I and his family one could certainly be established : it is not even likely that the plate has anything to do with such historical links.

If then we ask what importance the Sutton Hoo silver has for general archaeology we must distinguish between the semi-barbaric work and the more straightforward Byzantine pieces. As to the former we cannot deny that we are still very much in the dark, and the best that we can hope for is that the new finds may arouse interest in the study of the metal-work made in the various border countries of the Mediterranean world in the Late Antique and Early Byzantine periods. That there were artists in the north and northwest of Byzantium who combined classical and barbaric traditions in metal-work has been made sufficiently clear by certain finds from south Russia,⁷⁵ Hungary⁷⁶ and Albania.⁷⁷ That Byzantine pieces were imitated by Teutonic craftsmen

⁷⁵ Matzulewitsch, loc. cit. chapter VIII, *passim*.

⁷⁶ See above, p. 57.

⁷⁷ Strzygowski, *Altai-Iran und Völkerwanderung*, 1917, pp. 1 ff.

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in Western Europe is proved by the two silver bowls from Valdonne,⁷⁸ which even copy the control-stamps of their Byzantine models. But not until these various semi-barbaric styles and their relations to the big centres are more clearly defined can the Sutton Hoo pieces be given a more definite place in the evolution. The genuinely Byzantine pieces in the treasure, on the other hand, have been found to fit into well-known groups, and we saw that they supplement our knowledge of Early Byzantine metal-work in more than one respect. While the Anastasius dish is an example of the survival of a fourth-century style at a surprisingly late date, the spoons are chiefly interesting for their inscriptions.

As works of art the silver objects are not nearly as impressive as the gold ornaments, and the other pieces of Teutonic origin in the Sutton Hoo burial. But their archaeological importance is very great indeed, and they cannot fail to secure a prominent place in all future studies of the metal-work of the Dark Ages.

⁷⁸ See above, note 26.

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VI. THE COINS: A SUMMARY, by O. G. S. CRAWFORD

WHEN it was known that 40 gold coins had been found in the purse at Sutton Hoo, great hopes were entertained that they would enable the date of the burial to be fixed accurately. Those hopes have not yet, however, been realized. Under existing conditions little progress is likely to be made; but we may look forward to the day when they are again available for study, and when numismatists themselves are free to consider the problems presented.

Meanwhile some provisional account of them is obviously demanded. A short description has been published in the *British Museum Quarterly* by Mr Derek Allen, of the Department of Coins and Medals; and, through the kindness of Mr T. D. Kendrick and Mr Allen, the present writer has had access to some unpublished remarks by Monsieur Pierre le Gentilhomme, of the Cabinet des Medailles, Bibliothèque Nationale. Monsieur le Gentilhomme has most courteously allowed these remarks to be incorporated in the present summary; and Mr Derek Allen and the British Museum authorities have granted similar permission in respect of Mr Allen's note. Use has also been made of some criticisms of that note by Mr Trelawney Dayrell Reed, with his kind permission. To all these the writer wishes to express his sincere thanks, with apologies for appearing at all in this rôle, even if only as a summarizer of the opinions of others.

Mr Allen begins by describing the contents of the purse. It contained 40 gold coins, the size of a threepenny bit but thicker, and two small gold ingots. The coins are those called *tremissis* (one-third of a solidus), which denomination was a standard coin of the Byzantine Empire. They were all struck at Merovingian mints within or on the borders of France, and nearly all have on one side a human head descended from an imperial portrait and on the other a cross. The *tremissis* was adopted by the Franks, who copied it with increasing divergence from the Byzantine model.

There were over a thousand Merovingian mints, since every town and village had the right of striking coins. The name of the place

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where it was minted appeared on the coin, and also that of the moneyer, but some of the mints cannot now be identified. Except in the case of coins struck by kings and bishops and bearing their names, Merovingian coins cannot be dated exactly, but only by the criterion of style.

Not one of the Sutton Hoo coins can be definitely stated to have been struck by a particular king. One coin bears what seems to be a version of the name of the Merovingian king Theodebert the Victorious (534-548), but it is a later copy. Three coins bear unmistakable traces of the name of the Byzantine emperor Maurice Tiberius (582-602); they were struck in mints in the south of France, of which Arles and Viviers were two. But they were imitations struck without the emperor's authority, simply because his coins were generally acceptable. The remainder have no identification marks other than the name of the town and of the moneyer who struck them. Typical mints are Paris, Sens, Anvers, Dinant, Andernach, Le Huy. One was from Sion on the Swiss frontier and another from St. Étienne near Bordeaux. Three were left blank.

None of these coins can be precisely dated; 'though it is hard to say how much importance can be attached to the resemblance, there can be no doubt that the Merovingian king whose coins come closest to the bulk of those in this find is Clovis II (A.D. 638-657)'. A hoard buried at Bordeaux not long after 670 contained coins identical with two found at Sutton Hoo.

Mr Allen concludes that 'from the evidence of the coins, the Sutton Hoo burial cannot have taken place before about A.D. 600, is not likely to have taken place earlier than A.D. 640-50, and might even have taken place nearer A.D. 670'. He says that the coin evidence 'does not definitely exclude' the possibility that the grave is that of Redwald, who died about 630, but that 'they certainly seem to suggest a somewhat later date'.

Finally he points out that 'no coin in this find can be considered of English origin', nor do any of them resemble any known type of the English *tremissis* (or *thrymsas*).

Mr Dayrell Reed criticizes, from a detached point of view, the expert opinion summarized above, and emphasizes the dependence upon style for dating, and the fact that the differences in style within this (Merovingian) series are, in Mr Allen's words, 'too nebulous to provide a secure criterion'. That being so, he questions the validity of the

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resemblance—it is no more—to the coins of Clovis II, which being based on stylistic evidence, may, he submits, allow a margin of 30 years in either direction. ‘That is to say, the only evidence supplied by the bulk of the coins is that they might have been struck at any time between 615 and 675’.

He continues: ‘The coin discussed in the fifth paragraph [of the original] is a late copy of an issue by Theodebert (534–548), and “*may*” not have been struck till many years after his death. In view of the increasing wealth and power of the Merovingian dynasty at this time it is improbable that imitations of the coins of deceased monarchs were produced “many years after their death”. Imitation is a symptom of declining values. Further, the later our hoard is placed, the more remarkable the preservation of this stray survival becomes’.

With respect to the three imitations of coins of Maurice Tiberius (582–602), Mr Dayrell Reed points out that they may have been struck either during his reign or at any time after it, and that ‘the only evidence these coins supply is that they were not deposited in this hoard before 600’. He sees nothing improbable in supposing that they may have reached the east coast of England by 625, even if they were not struck until after the emperor’s death; and there is nothing to show that they were not struck during his reign.

He questions whether the enormous number of mints and moneyers working at the same time does not altogether invalidate stylistic arguments. The quality of the output must have varied enormously, so that twenty different coins struck in different places during the same year might be arranged on stylistic grounds so as to show either progressive degradation or, inversely, improvement.

He concludes that, on the evidence of the coins, there is nothing which can legitimately be used as an argument against 625 as a probable date for the burial. The coin evidence proves only that it could not have taken place before 600, and it certainly cannot be used to support an argument against the historical and archaeological evidence. ‘The jewelry, the silver, and the historic facts all support a date of about 625, and only by straining the numismatic evidence can that be made to oppose it’.

Monsieur le Gentilhomme admits the difficulty of dating the burial, but inclines to think that it took place ‘during the first part of the reign of Clovis II (638–656), because [amongst the Sutton Hoo coins] those with the anchor-cross do not yet preponderate over the types issued in Neustria and Aquitaine’. He describes the Crondal

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hoard (Hants) which contained 'about twenty Merovingian coins of Metz, Marsal, Meuvy, Paris, Rodez, Chalon, Quentovic [near Étapes], and Amiens, together with about eighty Anglo-Saxon coins. He points out that at Crondal Anglo-Saxon coins were plainly beginning to oust Merovingian ones, and that, with the exception of a barbarous *triens* of Phocas, Byzantine imitations and the issues of Provençal mints had ceased to circulate. These Byzantine imitations often occur in south-eastern England (at Sarre, Kent, for instance). 'The disappearance of Provençal coins, the appearance of an abundant Anglo-Saxon coinage, the fresh and great activity of the port of Quentovic . . . allows us to think that the Merovingian types [at Crondal] were buried at a date appreciably later than that of the issue of the majority of them—that is to say, towards the end of the reign of Clovis II, or even a few years after his death.

'The Sutton Hoo coin-find tends to show that up to about 650 the currency circulating in England at first consisted exclusively of Byzantine and Provençal coinage; and that this was later superseded in favour of issues proceeding from mints in the different provinces of the *regnum Francorum*. Shortly after 650, but not until then, the Merovingian coinage was overwhelmed by a wave of Anglo-Saxon currency, issued mainly in Kent and in the counties south of the Thames. The theory that *thrymsas* [i.e. Anglo-Saxon coins, o.g.s.c.] existed before 650 does not seem to me to be tenable; for if Merovingian coins and the most barbarous of their imitations circulated north of the Thames [as we know they did], there could have been no valid objection to the *thrymsas* also and their circulation. Since *thrymsas* are not present in a hoard as prolific as Sutton Hoo, it must be because they did not exist. So far from placing in the grave obsolete coins that no longer circulated, they put in the dead man's purse blanks which were not yet coined, and, besides, only such money as was then in circulation, that is to say, Merovingian money'.

In conclusion, the present writer will now summarize the discussion, so far as he is able, with the proviso that he has no special knowledge of the coinage of the period, and that he only is responsible for the statements which follow.

Mr Derek Allen considers that the Sutton Hoo burial 'is not likely to have taken place earlier than A.D. 640-50', but does not exclude the possibility that it may have been as early as 630 or as late as 670.

Mr Dayrell Reed, who had read only the note in the *British*

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Museum Quarterly and had not seen Monsieur le Gentilhomme's then unpublished remarks, considers that the coin-evidence is too unreliable to be used for dating the burial at all ; and that it certainly cannot invalidate a date about 625, which satisfies the other evidence far better than a later one.

Monsieur le Gentilhomme places the date of the burial before that of the Crondal hoard by about 10 or 20 years. Like Mr Allen he calls attention to a resemblance to coins of Clovis II (638-656). In a private letter, written before the remarks summarized above, he admits that Sutton Hoo may be dated ' at the beginning of the second third of the 7th century ', that is soon after 633.

It is clear that, in the present state of knowledge, where such a wide range of possibilities exists, a difference of five or ten years cannot be detected ; and that is all that separates the numismatists from their archaeological and historical colleagues.

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VII. THE SALVAGING OF THE FINDS, by W. F. GRIMES

THE removal of the chief finds from the Sutton Hoo ship was an exciting and exacting task extending over more than a week. My own participation began when the gold purse and its trappings—as well as some other objects, such as the whetstone—had been found. The dominant feature in my first view of the ship was a great three-foot purple-grey disk: the silver dish (PLATE XVIII), beneath which the lip of at least one other vessel was promise of more treasure to come. Other things there were already exposed—especially the two bronze bowls at the southwest corner of the burial deposit. But the urgent interest was centred on the dish and on the problem of whether it could be lifted entire, or whether steps should be taken by means of drawings and photographs to record its complete character before the hazardous work of lifting it began.

An examination at once suggested that things were better than they appeared. The surface of the dish was corroded and some of its ornament had flaked off in places. But the metal was thick and seemed to be strong, in spite of a crack along one side. There was every hope that if its underside and edge were carefully freed it might be lifted without disaster.

The necessary preliminary cleaning was completed in quite a short time on the morning of 25 July. But for various reasons the actual removal was postponed until the following day—although the dish was tantalizingly free in its bed. In the meantime we concentrated on two other outstanding groups.

First of all the bronze bowls. They are shown in PLATE XII, from which it will be seen that they were standing one inside the other, with a number of iron objects in close association. Three angons were actually pushed through the drop handle of the larger bowl, with spear-heads and other implements and weapons near at hand.

None of these iron objects was very robust, and corrosion was so far advanced that it was unlikely that any free metal could survive in any of them. To this factor of fragility were added other difficulties. The weapons were corroded not only to one another but also to the

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side of the bronze bowl with which they were in contact. And this solid but fragile mass was securely held in place by the fact that shafts and sockets were not in a neat bundle but splayed through the handle of the bowl.

Only laboratory tests could have decided whether the angons would be capable of being separated and finally preserved. But it was abundantly clear that they could not be mechanically separated on the spot, with the exception of one or two spear-heads which were only lightly in contact. They were therefore cleaned up with care and freed from sand—a task which took some time because of the large amount of undercutting and the generally restricted conditions—and the whole complex of bowls and iron objects was lifted intact.

The second group was at the opposite end of the burial deposit : several large cauldrons, bronze with iron rims, an iron-bound wooden tub or bucket, and a mass of iron tackle (PLATE XVI). Two of the cauldrons had completely collapsed, the iron hoops of their rims lying on a thin layer of green-corroded bronze fragments ; and were beyond all aid. The third cauldron was broken and distorted but in large pieces, with which something might be done. The tackle consisted of a complication of rings and bars connected with elaborate double links all solidified together. But all these were left in their cleaned state to be lifted later : it was now time to return to the silver dish.

The dish was taken up on the afternoon of 26 July and as I had expected, without difficulty. But it had at once to be placed on one side without examination for the time being. Beneath it was an assortment of articles (PLATE V), most of them in a fragile and parlous state, the recording, removal, and packing of which took the undivided attention of all working on the site.

The most urgent were the organic materials—especially a number of small cups which were thought at one hasty glance to be made of wood. But there were also leather and other materials, all of which owed their preservation to their having been more or less encased in fabric and a flock-like substance which had kept them in a state of perpetual dampness while shutting out air. Delay here would have been fatal. The cups already showed signs of distortion and were damaged in other ways. And a hot drying sun poured into the bottom of the ship. If they were to be preserved for future treatment it was obvious that quick measures were called for ; equally obvious that the best hope for their preservation would lie in a reconstruction of the conditions which had already preserved them for so many hundreds of

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years. The cups were therefore closely packed in damp moss in boxes with well-fitting lids to exclude as much air as possible, and stored in a cool place away from the sun. The leather and fabrics were put temporarily in bowls of water.

There is little to be said about the removal of the remaining objects from beneath the dish. The small silver bowl was taken up with its contents untouched but protected with a thick layer of moss; the bronze bowls were regrettably corroded and fragmentary, although there appeared to be hope for their escutcheons. The fine leather bag (PLATE XXI) in which the small dish lay was our despair. It had become ragged with decay, was cracked and fissured, with all its native toughness gone. The remnants were cleaned and photographed *in situ* (PLATE XXI); after that interest concentrated on the size of the largest piece that could be detached unbroken from the underlying wood of the trough (PLATE XXIV) in which all these objects had been deposited. The hectic operations connected with all that underlay the great dish occupied the whole of the afternoon and evening of 26 July. The trough and the objects surrounding it were left until later; the wood was protected from the drying action of sun and air by a thick covering of damp cloths.

On 27 July we turned once again to the western end of the burial chamber. From the area which had already produced the whetstone, several small objects were recovered of which nothing need be said here. Their removal however revealed an iron object which proved to be of quite unexpected size and character. As with cleaning its various features became clear we called it a lamp-stand (PLATE II). It was much corroded but appeared to be fairly strong, and in spite of its size was lifted quite easily. The surrounding sand was completely removed and the weight of the stand evenly supported by three people. It was placed on a wide plank of a suitable length on which its unsupported parts were propped with packing covered with cotton wool.

Near the lamp-stand was an iron-bound wooden bucket in an advanced state of decay. The iron binding was badly corroded; the wood had become friable. The vessel had therefore collapsed upon itself and become a more or less shapeless mass. Even so it seemed possible that careful removal might enable some sort of reconstruction to be attempted later—and there was the further possibility that the bucket might contain other material of interest.

Surplus sand having been removed, the bucket was bound firmly round with webbing, particular care being taken with the lower part,

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upon which the greatest strain was to be placed. A piece of thin iron plate of slightly larger area than the bucket was then obtained and gradually introduced beneath its base, the sand being cleared away in front of the forward edge of the plate with a trowel (PLATE XXII). With the plate completely inserted the bucket was ready for lifting. But the iron was too thin to sustain the quite considerable weight of the bucket without buckling—which would of course have disturbed the already broken pieces. A flat spade was therefore inserted beneath the plate, which prevented any lateral pressure being inflicted on the bucket while providing a large surface for its support. Bucket and plate were then lifted together on the spade and placed on strong boards so that the spade could be withdrawn.* In this way no part of the bucket was seriously disturbed; there was the possibility that with careful dismantling it might be reconstructed if in no other way, and its contents, if any, remained untouched.

The way was now clear for a return to the central deposit in which the gold purse had been found. In comparatively quick succession the gold objects remaining were cleaned and removed. Apart from the obvious necessity for care in cleaning they caused no difficulty, being completely uncorroded and essentially undamaged.

The sword presented an insoluble problem. Its hilt was decayed and corroded beyond hope of recovery except in detached fragments. Its blade scabbard and covering of fabric were corroded into a solid mass which had been badly damaged in the collapse of the chamber and was otherwise curiously brittle, cracked and fissured in many places. Its condition is well illustrated in PLATE IX. We were obliged to take it up piecemeal.

Near the sword-hilt was a smudge of purple indicating silver, of which we had been conscious for some time. It was roughly circular in shape and near it was what appeared to be the end of a slender moulded bar. This of course was the nest of bowls (PLATE XIII) and the attendant spoons. But the character of the objects only became apparent after prolonged and patient cleaning. The topmost bowls, one of which had slipped from the pile, were badly broken. For these

*I have used an almost similar method in removing very fragile Bronze Age pottery. The consolidation of two Bronze Age urns from Coity, Glamorgan (Sir Cyril Fox in *Archaeologia*, 1937 (1938), LXXXVII, 166-7, fig. 3 (p. 132) and plate XLVI) was only possible because they were lifted intact in this way and the crumbling pottery hardened and treated in the workshop before its contents (which helped to reinforce it) were removed.—F.W.G.

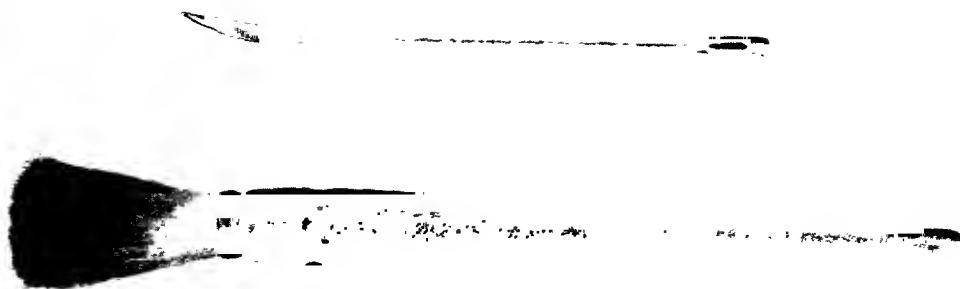
PLATE XXI



RIBBED LEATHER BAG WITH SILVER HANDLES FOUND UNDER THE SILVER BASIN (see pp. 18, 71)

Pl. O. G. S. Crawford

PLATE XXII



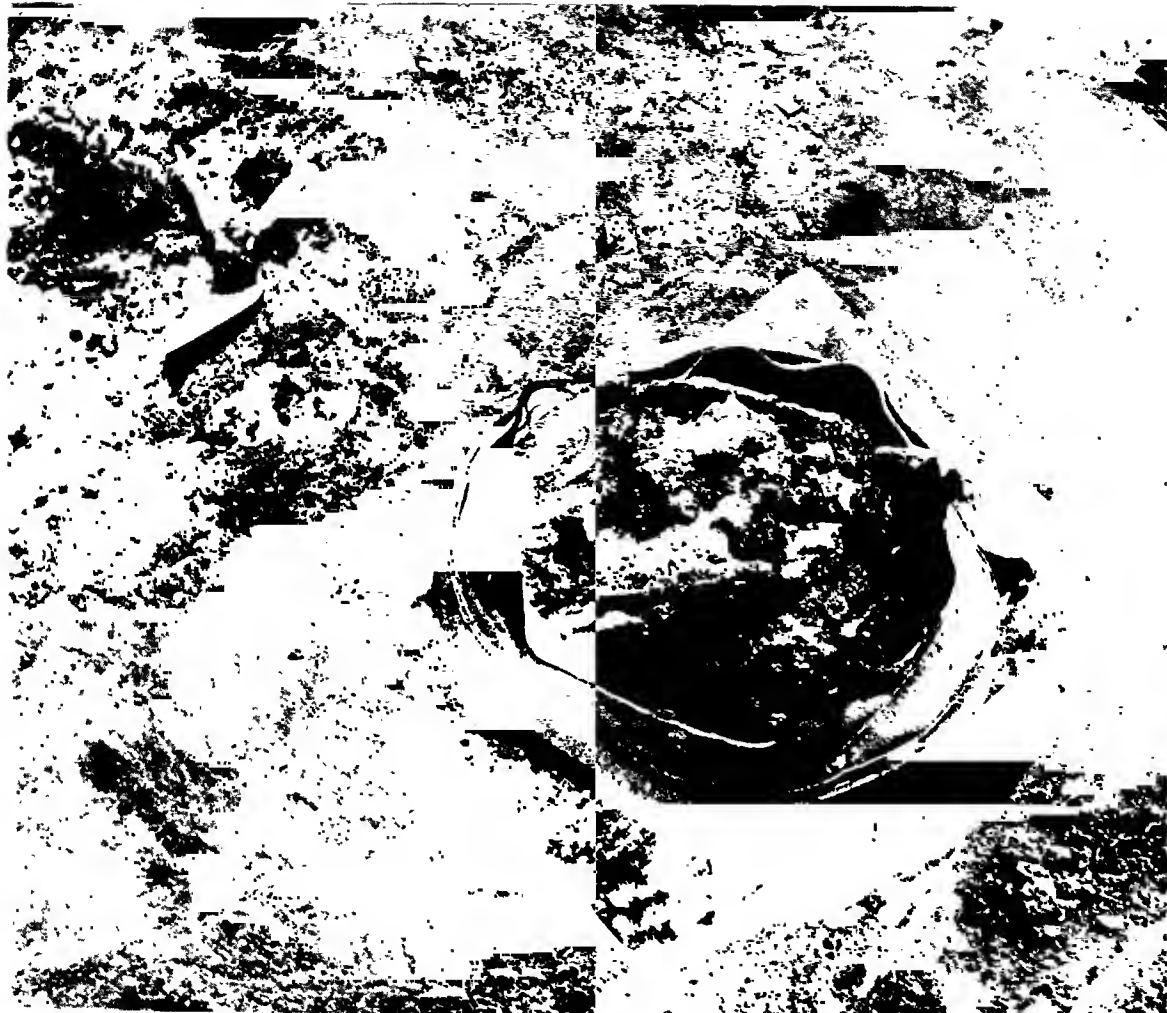
THE BODKIN AND BRUSH USED DURING EXCAVATION (*see p. 74*)



AN EARLY STAGE IN THE REMOVAL OF IRON-BOUND WOODEN BUCKET (*see p. 75*)

Ph. O. G. S. Crawford

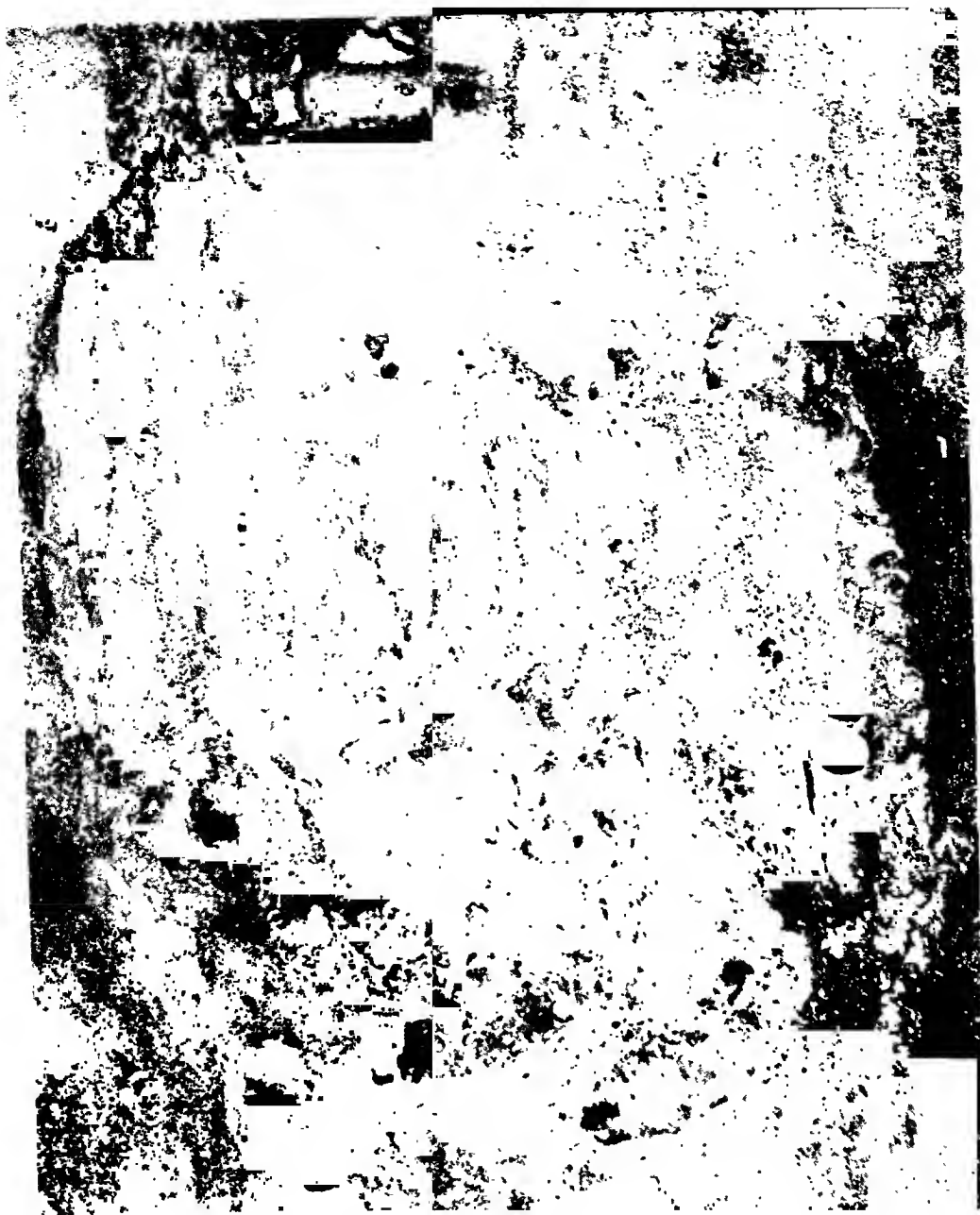
PLATE XXIII



IRON-BOUND WOODEN BUCKET JUST BEFORE REMOVAL (see p. 72)

Ph. O. G. S. Crawford

PLATE XXIV



WOODEN TRAY UNDER SILVER DISH, WITH CHAIN ARMOUR, AXE, ETC. (See pp. 69-71)
Ph. O. G. S. Crawford

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we were obliged to be content with fragments and a photograph. The pile itself was completely freed from sand around the base and lifted by means of an iron plate as before (but without the spade).

The greater part of 28 July was devoted to what was perhaps the most intricate piece of cleaning: that of the remains of the shield. The central feature was the massive boss (PLATE XV), which was solid and unlikely to cause trouble. But radiating irregularly from it were several richly decorated bronze mounts: some of almost paper thinness, some face upwards, some reversed, at all angles and presenting a picture of complete confusion which is well shown in PLATE XV. To add to the

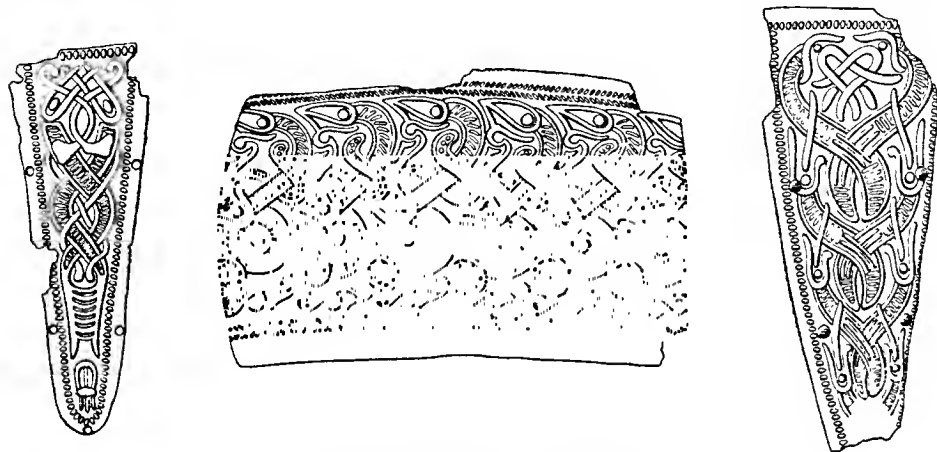


FIG. 6. SILVER MOUNTS FROM DRINKING HORNS

By permission of the British Museum

difficulties this complex was partly covered with the remains of a fine wooden object ornamented with gold leaf. None of the material of the shield itself appeared to remain. The *umbo* was lifted without difficulty, but freeing the various adhesions of the mounts was a slow and tedious business. Each was lifted separately on two or more trowels after it had been drawn in on the plan.

And lastly, for the purposes of this account, there were the horns, which were taken up on 29 July. Two of them were in a comparatively complete state; of the remainder only the mounts survived, consisting of binding and vandyke patterns of triangular plates resembling nothing as much as a series of purplish hand- or star-shaped imprints against the black ground of the wood upon which they lay (PLATE IV). The metal was very thin and brittle, and the only hope of preserving the mounts

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intact seemed to be to lift them on the wood, itself decayed and broken. The wood was therefore carved up and each group of mounts lifted separately by inserting trowels beneath it.

This account of the salvaging of the treasures of Sutton Hoo is not therefore a story of new and elaborate technical methods, but rather of the way in which simple readily available means were employed to deal with an unexpected range of materials, each, apart from the gold objects, with its own set of problems. In some cases one could visualize an instrument or method by which the solutions would have been the more easily obtained. I longed several times for a broad-bladed implement, a kind of fish-slice, which (in various sizes) would have been ideal for lifting such things as the horn-mounts, the silver bowls, and even the wooden bucket. But only a specially made tool could have combined all the necessary qualities: strength to sustain weight and pressure, thinness and a sharp edge of a suitable outline for easy insertion beneath the object to be removed.

The absence of some luxuries had to be countered by patience and perseverance. Our tools were of the simplest kind (PLATE XXII). Here we were fortunate in our soil: the sand yielded readily to treatment, and especially, when dry, to brushing for the more delicate objects. For these the usual procedure was a sequence of alternate phases of brushing and drying, the surface sand being removed to expose a new damp sand which in its turn was allowed to dry. Paint brushes were most useful for this purpose. In actually carving sand away from heavy objects calling for no special treatment of the surface—and also for much of the finer work—I was very grateful for a curved bodkin or packer's needle, especially as long as its point remained sharp. The curve of the needle was particularly useful for negotiating hollows, angles and undercutting; it provided a sensitive 'feeler' for unexpected shapes; and since it was not mounted in a handle it could be used in a restricted space.

Of the general practice of cleaning it remains to be said that each specimen, whatever its material and character, was freed as completely as possible from its matrix: the importance of this first step cannot be too strongly emphasized. (Even sand when damp is strongly prehensile, and the extra strain imposed by its adhesion even to a small area might well result in damage to a fragile specimen). Care in coaxing the sand away without damaging the surface and in lifting the object so that all its weight was equally distributed, with no strain on any one part,

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completed the process. Such precautions may appear to be obvious, but were especially important on a site where all except the most precious metal was badly decayed and corroded.

In the circumstances, dealing as we were with a wide range of objects and materials all calling for laboratory treatment, and not knowing what else we might have to face, it was sound policy to remove even the most unpromising of finds with as little interference as possible. Chemical and other methods have now replaced more direct mechanical treatment of antiquities ; here mechanical treatment was reduced to the minimum necessary to remove the object from the ground. In addition, even with much broken and apparently worthless objects, much time and trouble were expended in attempts to maintain the various parts and fragments in their relative positions, as a very valuable first step in reconstructing the original or obtaining maximum information from it by more leisured laboratory examination at a later stage. This was not always successful and sometimes was impossible, even from the beginning. But every attempt was made to see that no scrap of evidence from Sutton Hoo was lost by lack of care and patience in the field.

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VIII. WHO WAS HE? by H. MUNRO CHADWICK

I WAS unfortunately not able to be present at the inquest held on 14 August, but I understand that no satisfactory evidence of identity was offered. Indeed the prevalent view now* seems to be that the tomb never contained a body—that it was constructed as a cenotaph.

For cenotaphs in the Anglo-Saxon period I do not know of any good evidence.¹ But we can hardly say with certainty that any of the cemeteries previously known were royal—apart from St. Augustine's, Canterbury. It is not impossible therefore that a cenotaph may have been constructed for a king who lost his life at sea or on some distant expedition, from which his body could not be brought home.

In any case there seems to be no reason for doubting that the barrow is in some sense a tomb or mausoleum. It is one of a group, which evidently form a cemetery,² more or less contemporary with the buried funeral ships at Vendel. Later analogies, from the Viking Age, are very numerous in the North. Indeed I do not know of any buried ships which were not funeral ships.

To facilitate the process of identification, we may note first that the person commemorated seems to have been a man. This is placed beyond reasonable doubt by the presence of weapons and armour, and by the absence, as far as I know, of any articles which would suggest a woman.

Next, I find it impossible to believe that in the times with which we are concerned a treasure of such amount and value can have belonged

* This is the view that is, and always has been, held by all those who took part in the excavation; there has been no change of view. The idea that a body was buried in the ship originated in the imagination of an uninformed newspaper writer. It would be a perfectly reasonable one if it could be supported by any evidence.—O.G.S.C.

¹ An instance (from Kent) is cited by Baldwin Brown, *The Arts in Early England*, iv, 720; but the evidence is hardly convincing. Mr Lethbridge tells me that he does not know of any examples; likewise also Mr Phillips.

² I wish to take this opportunity of expressing my grateful thanks to Mr C. W. Phillips for showing me the site and supplying me with detailed information about the excavation from the beginning.

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to anyone except a king. According to the heroic standards then recognized, all men of the highest rank were dependent on the king and expected to present to him, as their lord, everything that they acquired by their exploits—though doubtless they looked for rewards. We may refer to *Beowulf*, 2052 ff, where the hero, on his return home, presents to the king and queen all the treasures which have been given to him at the Danish court. There is no evidence that England in the seventh century possessed a wealthy independent class, whether mercantile, industrial or professional.

It does not necessarily follow that the person buried or commemorated was himself a king. We know of extravagant funeral honours paid by kings to their mothers and wives; and this funeral may possibly have been in honour of the father or other near relative of a king. But on the whole it is not very likely. The great funerals we hear of in early Teutonic history and tradition are those of kings themselves; we may cite *e.g.* Jordanes, *Get.* 49, and *Beowulf* 3134 ff. At all events it is difficult to believe that a cenotaph on this scale can have been intended for anyone except a king.

Next, there can be little doubt that the owner of the treasure was the king within whose dominions the mausoleum lay. The possibility that the funeral was that of a stranger is hardly worth taking into account. The barrow is one of a group of about ten—which seems to indicate a family burial-place. Moreover, the grave of a stranger which was known to contain immense wealth could hardly have escaped plunder in the course of the next three or four generations, during which the tradition of the funeral was remembered. On the other hand its preservation can be satisfactorily explained, if this cemetery was the burial-place of a native royal family, who had an important residence within a short distance.

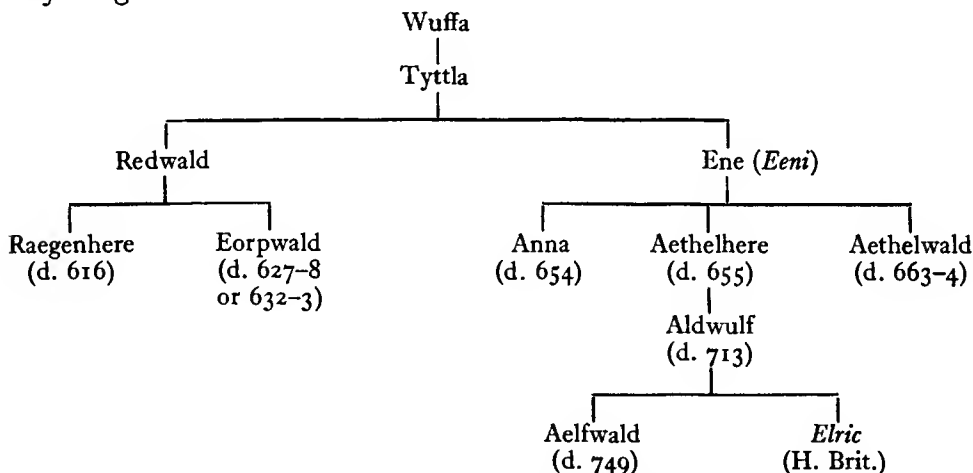
From the earliest times of which we have any record the estuary of the Deben, including Sutton Hoo, has belonged to East Anglia. Our earliest record, in Bede's *Ecclesiastical History*, III, 22, relates to a visit paid, between 655 and 664, by Swithhelm, king of Essex, and Cedd, bishop of Essex, to the East Anglian king Aethelwald at Rendlesham, which is described as an East Anglian royal residence (*vicus regius*). Swithhelm was then baptized by the bishop; and Aethelwald was his godfather. Rendlesham is the place where the silver crown, weighing 60 ounces, was dug up in 1687; it lies on the Deben, less than four miles north of the barrows.

It is not impossible of course that the district was once included in

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Essex. But we have no evidence that that kingdom ever extended beyond the mouth of the Stour. Moreover it is difficult to avoid suspecting some connexion between the barrows at Sutton Hoo—at least two of which contain ships—and the only other buried ship dating from Anglo-Saxon times, which was found near Snape, on the Alde, about six miles to the northeast of Rendlesham. So, with such evidence as we have at present, we must, I think, conclude that Sutton Hoo was a burial-place of the East Anglian royal family, and probably connected with the royal residence at Rendlesham. Possibly the burial on the Alde was connected with the same residence.

The East Anglian royal family were called Wuffingas. Their genealogy is preserved in a good number of records, the best of which is a document (register) dating from early in the ninth century and contained in MS Cotton Vesp. B 6, fol. 108 ff.³ We may also compare Bede, *Hist. Eccl.* II, 15, and the *Historia Brittonum* (Nennius), cap. 59. For the period which here comes in for consideration the genealogy may be given as follows :



Anna, who seems to have come to the throne about 640, was preceded by two kings named Sigebert and Ecgric, whose positions in the genealogy will need discussion below.

From Wuffa the genealogy is carried back in the seventh generation to Caser, son of Woden. This name (*i.e.* Caesar) and the fact that no

³ Published in Sweet, *The Oldest English Texts*, p. 167 ff (this list on p. 171). The text is illegible in some places, but can be restored by the help of MS C.C.C.C. 183.

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connexions of the genealogy have been found outside Britain suggest that in its present form the genealogy is not very ancient.

In the *Historia Brittonum*, cap. 59, which is derived from an English document of the eighth century, Wehha (*Guechan*), the father of Wuffa, is said to have been the first to reign in Britain over the *gens Eastanglorum*. To judge from the genealogy Wehha would seem to have flourished in the first half of the sixth century, *i.e.* nearly a century after the English invasion. Apart from this no records or traditions of the origin and early history of the kingdom have been preserved. There are certain earthworks in Norfolk which suggest an ancient division of the country between west and east; but the problem cannot be discussed here.

Mention, however, should perhaps be made of the story⁴ of Radiger and his English fiancée, which is told by Procopius, *Gothic War*, iv, 20, and relates to times about 545-50. The heroine's brother, who is king of the English, might well be Wuffa.

Otherwise we hear of Wuffa and his son only from entries in compilations dating from the thirteenth century. The entries may be derived ultimately from early records, though this would be difficult to prove. In Matthew Paris' *Chronica Majora* Wuffa is said to reign in East Anglia under the year 571, while in 577 he is said to have been succeeded in the kingdom by his son Titilus (*i.e.* Tyttla). Both in 599 and in 624 we find an entry that on the death of Redwald, king of the East Anglians, Eorpenwaldus (*i.e.* Eorpwald) undertook the government of the kingdom. In the former case (*i.e.* under 599) this is obviously due to some scribal mistake; it would seem to have displaced an entry stating that Redwald had succeeded Tyttla in that year.

For Redwald and his successors we have a certain amount of information from Bede's *Ecclesiastical History*, which was completed in 731. Unfortunately only a few precise dates are given.

Redwald is said (II, 5) to have been the fourth of the English kings who acquired a supremacy or high-kingship (*imperium*) over the other English kingdoms.⁵ It may be remarked here that this position involved a personal relationship, which was probably expressed by the

⁴ Cf. Baldwin Brown, *Arts in Early England*, iv, 764 f; Chadwick, *Heroic Age*, p. 97 ff.

⁵ The Saxon Chronicle (*ann.* 827), translating this passage, applies to the high-king the term *Bretwalda* (in the oldest text) or *Brytenwalda*. The latter term seems to mean 'ruler of Britain', the former 'ruler of the Britons' (as in the next following sentence in Bede's narrative).

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terms 'father' and 'son'. It involved also no doubt the duty of military support and the recognition of rights possessed by the supreme king over the property of his vassals. In later times grants of land by kings of the smaller kingdoms commonly specify that the consent of the Mercian king has been obtained; and as early as 635 we find the Northumbrian king Oswald (who was then high-king) associated with Cynegils, king of Wessex, in granting Dorchester (Oxfordshire) to Bishop Birinus (cf. Bede, *H.E.* III, 7).

From the latter part of the sixth century the high-kingship seems to have been a more or less permanent institution, with few and short intervals. Redwald's immediate predecessor in this position was Aethelberht, king of Kent, who died 24 February 617; but Redwald had acquired the high-kingship before this date. His power was in all probability due to conquests from his western neighbours, the Middelengle; but we have no definite information.

We learn that the exiled Yorkshire prince Edwin had taken refuge with Redwald (Bede, II, 12). He was pursued by the Bernician king Aethelfrith, who had conquered the kingdom of his family. The northern kings, it may be observed, did not recognize the high-kingship at this time. By great offers of treasure, followed by threats, Aethelfrith almost induced Redwald to give up the fugitive. But at the last moment Redwald's queen dissuaded her husband from doing so, saying that it was unseemly to sell a good friend for gold, or to forfeit for the sake of money his good faith, which is more valuable than treasures. Redwald then took up the cause of Edwin and supported him with an army. They defeated and slew Aethelfrith on the Idle—presumably near Bawtry. Redwald's son Raegenhere was also slain in the battle; but Edwin acquired the rule of all Northumbria. This was in 616.

Redwald is said (Bede, II, 15) to have been converted to Christianity when on a visit to Kent. But on his return home he was seduced from the faith by his wife and some wrong teachers. So he compromised by setting up one altar (*altare*) to Christ and another (*arula*) to demons in the same sanctuary. No date is given for this; but presumably it took place during the time of Aethelberht's supremacy, *i.e.* some time before 617. It was stated by king Aldwulf that this sanctuary remained until his time, and that he had seen it in his childhood.

The same chapter relates that king Eorpwald, son of Redwald, was persuaded by Edwin to embrace Christianity, with his kingdom.

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Soon afterwards he was killed by a heathen called Ricberht ; and the country remained heathen for the next three years. Then the kingdom came into the hands of Sigeberht, a most learned and Christian man, who had been in exile in Gaul. He was joined by Bishop Felix of Burgundy, who fixed his see at Dunwich ; and the whole kingdom was converted. No dates are given.

It is stated (Bede, III, 18) that Sigeberht had fled to Gaul to escape the hostility of Redwald. After reigning for some time he withdrew to a monastery which he had founded (at Bury, according to the *Hist. Eliensis*, I, 1), and gave up the kingdom to Ecgric, his *cognatus*,⁶ who had already been reigning with him. After a considerable time the Mercian king Penda invaded the country. Sigeberht was forcibly brought out to lead his former subjects. But both he and Ecgric were killed.

These two kings were succeeded by the excellent king Anna, who also was eventually killed by Penda. Again no dates are given. But we find Aethelhere, Anna's brother and successor, accompanying Penda to war ; they were both killed at the battle of Winwaed (in Yorkshire) on 15 November 655 (Bede, III, 24).

The dates of Eorpwald's conversion and death and of Sigeberht's accession can be calculated approximately from Bede (III, 20). Felix held the bishopric for 17 years, and his successor, Thomas, for five, while the third bishop, Berhtgils, was consecrated by archbishop Honorius, who died 30 September 653. Consequently, the arrival of Felix and the accession of Sigeberht cannot be later than 631. On the other hand Edwin can hardly have converted Eorpwald before he was himself converted, *i.e.* in the spring of 627. The Saxon Chronicle, however, records Eorpwald's baptism in 632 and that Felix preached in 636. The discrepancy is no doubt due to misreading of some figure in ancient times ; but it is perhaps not very important for our purpose. On the whole the earlier dates seem to be the more probable, *i.e.* 627-8 for Eorpwald's conversion and death and 630-1 for Sigeberht's accession.⁷

A few more details may be added from other sources. The Saxon Chronicle (A,B,C) dates Anna's death in 654. The *Historia Eliensis*, I, 7, says he was buried at Blythburgh, and that his body is still (*i.e.* in the twelfth century) venerated there. We may probably accept this,

⁶ Unfortunately the meaning of this word seems to be quite ambiguous ; cf. Plummer *Baedae Op. Hist.*, II, 48.

⁷ Cf. Plummer, *Baedae Opera Historica*, II, 106.

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though the work contains a good many mistakes. The date 637 assigned to Anna's accession would seem to be too early ; but he was reigning in 645-6, when he converted Coenwalh, king of Wessex.⁸

I understand that the evidence of the coins rules out the possibility of any date before 600, and renders improbable any date before 640, for the burial at Sutton Hoo. By the latter date East Anglia was at least nominally a Christian country. Is it possible that a burial of this kind—and on this scale—could have taken place in Christian times ?

If the possibility be admitted, there are five kings to be taken into account—Sigeberht, Ecgric, Anna, Aethelhere, Aethelwald. Of these we may almost certainly eliminate Sigeberht, the monk, and Anna, who also was a very religious man,⁹ and is said to have been buried at Blythburgh. Aethelwald would also seem to have been active in converting his friends ; and he was probably the person responsible for the destruction of Redwald's 'compromise' sanctuary. There remain Ecgric and Aethelhere, both of whom were killed in battle, the former probably on the western frontier—perhaps in Cambridgeshire—the latter in Yorkshire. Of Ecgric we know nothing. He may have been either a younger brother of Eorpwald or an elder brother of Anna. Aethelhere was married to a Yorkshire princess, Hereswith, sister of St. Hild and cousin to Edwin ; but she left him, in or before 647, and became a nun at Chelles, near Paris. It is possible that he was a not altogether unwilling follower of Penda, since he is said to have begun the battle (*auctor ipse belli*) in which they both lost their lives.

The burial at Sutton Hoo then might belong to either Ecgric or Aethelhere. Yet it seems rather strange that a funeral of such heathen splendour should be given to either the partner of a monk or the husband of a nun. And it could hardly have been carried out without at least the consent of the king's successor, who was in the former case Anna, in the latter Aethelwald. One might expect that both these kings would have demurred, both on religious and financial grounds, to such a method of disposing of the royal treasury, more especially in a moment of national disaster, as was clearly the case at Ecgric's death.

The custom of burying objects of various kinds with the dead did not cease with the introduction of Christianity. Some rich Frankish cemeteries, *e.g.* at Worms and Mainz, were attached to churches ; and

⁸ Cf. Bede, *H.E.* III, 7 ; Saxon Chronicle, *ann.* 645, 646.

⁹ All his daughters became nuns, and three of them saints, while his son-in-law, Erconberht, king of Kent, was the first English king to enforce the renunciation and destruction of idols and the observance of Lent.

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in these there have been found a number of graves, well furnished with both weapons and ornaments, and containing grave-stones with Christian inscriptions, which originally no doubt stood or lay above the graves.¹⁰ I do not know whether such striking evidence has been found in this country, though the cemetery at Burwell, which was not very rich, was attached to a church. But there can hardly be any doubt that a good number of cemeteries, especially in Kent, which are attributed to the seventh century, were in use in Christian times.

A literary record of the custom is preserved in *The Seafarer*, 97 ff.¹¹ The poem has been describing the sorrows of old age. Then it continues: 'Though he will spread with gold the grave of his own brother, and bury with the dead in treasures of various kinds what he wishes to have with him, yet gold, which he has hidden while he is still alive here, will not be able to help a soul which is sinful, in place of the fear of God'. This obviously reflects the feeling of a time when the custom was regarded with disapproval, but not actually prohibited. The date of the poem is uncertain.

It may be doubted greatly whether extravagance on the scale found at Sutton Hoo ever prevailed in the burials of Christian times. But the first effect of the conversion was not so much the discontinuance of grave-offerings as a change in the place of burial. People were now taken to churches for burial; and, just as in Iceland in later times, this change probably took place at once. Kings and members of their families were buried within the churches.¹² Thus, according to Bede (I, 33, II, 5), Aethelberht and his wife Berhte were buried in St. Augustine's, Canterbury, which he had himself founded; and so also all the subsequent kings of Kent, several of whose tombs are still visible. Sebba, king of Essex, was buried in St. Paul's (*ib.* IV, 11). In York Minster were buried two infant children of Edwin (*ib.* II, 14), its founder, and also Edwin's head (*ib.* II, 20), and doubtless many later Northumbrian kings (*e.g.* *Saxon Chron.* 738).¹³ Mercian kings were

¹⁰ Examples may be found in Lindenschmit's *Handbuch*, pp. 100 ff.

¹¹ Kershaw, *Anglo-Saxon and Norse Poems*, p. 25.

¹² For early churchyards see Baldwin Brown, *op. cit.* I, 260 ff. But there is much more evidence than is indicated there. The case of Burwell is illuminating. So also is the cemetery at Saffron Walden, which was misunderstood by Baldwin Brown. He overestimated the break in the continuity of life caused by the English invasion. The character of the *locus sanctus* (*ib.* 253) is clear from the case of Hoddum; and numerous other churches, at least in the north and west, doubtless had a similar origin.

¹³ Other Northumbrian royalties were buried in the abbey of Whitby (*H.E.* III, 24).

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buried at Lichfield and Bardney (*ib.* 716), and other churches. The same custom prevailed among the Franks. Clovis, the first Christian king¹⁴—converted in 496—was buried in the Church of the Apostles at Paris; and his descendants seem regularly to have been buried in churches.

Some of the burials noted above took place within a very short time after the conversion—those of Edwin's children within five or six years at most. The custom marks a definite break with the past. The burial places of the past were known in Christian times as 'heathen tombs'. Whatever may have been their form, they are frequently mentioned in the descriptions of boundaries of estates which occur in legal documents.

Treasure buried in barrows is sometimes called 'heathen gold' (*e.g.* *Beowulf* 2276). But it is not clear that burial in a barrow was in itself regarded as necessarily heathen,¹⁵ unless it had heathen associations. The feeling may rather have been that such burial did not possess the virtue of benefiting the soul, which was probably attributed to burial in a consecrated place. Sometimes barrows contain objects which indicate Christian ownership, as in the Benty Grange and White Low barrows in Derbyshire. If this means that the occupants of the barrows were themselves Christians—which on the whole is more likely than not—the most probable explanation is that burial in a consecrated place was not available to them; the Mercian government was heathen until 655. But these considerations do not apply to the case we are discussing. After 640 an East Anglian king or prince would have had no difficulty in obtaining burial in a consecrated place. Moreover the Sutton Hoo cemetery can hardly have been free from heathen associations. Its use must at least have begun in heathen times; for one of the barrows shows cremation. We must conclude then, if the funeral took place after 640, that it was due to a deliberate reversion to heathenism.

The greater part of the cemetery still awaits excavation; and it may have yet further surprises in store for us. But in the meantime it seems to me that any dating of the ship-funeral after 640 presents very serious difficulties.

¹⁴ I do not know of any evidence that his father, Childeric, was ever converted. But it was in the cemetery of a church in Tournai that his grave was found in 1653.

¹⁵ It may be observed that the (Continental) Old Saxons after their conquest by Charlemagne, in 785, were required to bury Christians in cemeteries of the church, and not in 'barrows of the heathen'. Cf. Baldwin Brown, *op.cit.* I, 260f.

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Among the kings who died before 640 Redwald first claims consideration. He was the most powerful, and probably the wealthiest, ruler of his day in England, and the only East Anglian king who ever attained to the high-kingship. Much of his wealth may have been derived from Kent, when he displaced Aethelberht in the high-kingship; but the story noticed on p. 80 shows that other sources of wealth also were open to him. Whatever English skill could produce would be at his disposal; and any craftsman would be anxious to enter his service.¹⁶ We may refer to the description of the goldsmith in *The Fates of Men*, 72 ff: 'For one a marvellous gift is provided in the working of gold. Very often he arms (?) and adorns finely the sons of the king of Britain (?); and the latter in reward grants him large estates, which he receives gladly'.

For the date of Redwald's death we are dependent on thirteenth century authorities (cf. p. 79); but there is some reason for believing it to be approximately correct. From the events of the year 626, related by Bede (*H.E.* II, 9)—the attempted assassination of Edwin by an emissary of the West Saxon king Cwichelm, and the consequent invasion of Wessex by Edwin—we may infer that there was then no undisputed high-king in the country, and probably also that Edwin and Cwichelm were rivals in claiming that position.

Of the other kings who died before 640 very little is known. Eorpwald apparently did not reign long—perhaps not more than three years. He was converted by Edwin, but murdered soon afterwards by a heathen named Ricberht. The country then reverted to heathenism for the next three years; but we do not know who was king. If Sigebert, who was a strong Christian, gained the throne by force of arms, he would hardly have given such a funeral as this to his defeated opponent. But some king may have died during the interval, or possibly Ecgric's reign may have begun from Eorpwald's death.

In addition to Eorpwald, Redwald had another son, called Raegenhere, who, if we may judge from the initial *R*- of his name, was probably his eldest son. He was killed in battle in 616, so must have been born before 604.

Of Redwald's brother Ene we know nothing except that his son Anna cannot have been born much after 600. Sexburg, daughter of Anna, was wife of Erconberht, king of Kent, who reigned 640–664.

¹⁶ This period was a great time for craftsmen who were in the service of kings. St. Eligius, bishop of Noyon, had been goldsmith to king Dagobert I (622–638).

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The name of Anna's queen is not recorded ; but, if we may judge from the names of her two eldest daughters, Saethryth and Sexburg, she was probably a daughter of Saeberht, king of Essex, and therefore not born before 600. Hereswith, wife of Aethelhere, was born not later than 617. It would seem then that the children of Redwald and of Ene were probably born about 600-615, and consequently the fathers themselves, like Saeberht, about 570-580.

Bede describes Sigeberht as brother of Eorpwald ; but Florence of Worcester says he was only his half-brother, on the mother's side. Florence usually—not always—follows good authorities ; and this statement derives some support from Redwald's hostility to Sigeberht. It would seem then that Redwald had married the widow of a previous king, or at least an heir to the throne, This might be either his father (Tytla) or an elder brother of his own, whose name has not been recorded. But if the funeral was in honour of this person, its date cannot be appreciably later than 600. It is more likely to have been that of the later and wealthier man.

The lady's name also has unfortunately not been preserved. She was evidently a person of much force of character, and a staunch heathen ; and it is tempting to see in her the person responsible for the funeral. She would presumably have charge of the treasury,¹⁷ at least if her children were young. It may well have been through her influence also that the Christians of the next generation, including her own sons, were induced to respect and protect the mausoleum. And in the same way we may account for the curious fact that the unorthodox sanctuary, for which she was largely responsible, was allowed to survive for so long.

For the funeral of a high-king an interesting parallel is to be found in the opening scene of *Beowulf*. The subject is probably a mythical character—Scyld, the eponymous ancestor of the Danish royal family, who were called Scyldingas—but he is described as a typical heroic high-king. He was a knight who inspired terror, and deprived many royal families of their palaces. He attained such success in the world and gained such glory that all his neighbours across the sea had to obey him and pay him tribute. When the hour of death came, his men brought him to the sea, in accordance with his directions. 'At that haven stood the prince's vessel with curved prow, iceclad and ready for departure. Then they laid their dear king, their famous and

¹⁷ Cf. *Beowulf*, 2369 ff ; Paulus Diaconus, *Hist. Langobard* II, 29.

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generous lord, beside the mast in the bosom of the ship. Many jewels and treasures from distant lands had been brought together there. I have never heard of a vessel more handsomely equipped with swords and mailcoats, with weapons of war and raiment of battle. In its bosom lay a mass of jewels, which were to make a long journey with it into the sea's domain . . . Moreover above his head they fixed aloft a golden standard. They gave him to the sea to carry; they committed him to the ocean. Sad were their feelings, sorrowful their hearts. No man—no heroes on the earth, even they who govern palaces—can say for certain who received that burden'. The ship here is of course set adrift, not buried. But in other respects the passage offers interesting analogies.

To sum up—nothing has yet been found which can produce a decisive identification of the person buried or commemorated in the mausoleum. But there is no reason for doubting that he was a wealthy East Anglian king. The evidence of the coins is said to exclude a date earlier than 600 and to render a date before 640 improbable.¹⁸ The latter date falls within Christian times. If it is accepted, the owner of the mausoleum was most probably either Ecgric (killed soon after 640) or Aethelhere (killed in 655). Such a burial, however, is not what one would expect for either of these kings from what little is known of them; and in general it would seem to be quite abnormal in Christian times. The excavation of the neighbouring barrows may clear up the difficulty. But in the meantime I think the date 640 is too late. If the burial dates from 600–640, all probability is in favour of the great and wealthy high-king Redwald, who seems to have died about 624–5. He may possibly have buried the objects himself at the funeral of a relative; but what we know of the personnel of the period suggests that his wife was the person responsible, and consequently that the person commemorated was probably Redwald himself.

¹⁸ The reader may now be referred to Mr Crawford's summary (pp. 64–8) of the Coins found at Sutton Hoo, which I had not read when this was written.

Reviews

DANMARKS OLDTID.* By JOHANNES BRØNSTED. *Copenhagen: Gyldendal.*
Vol. I, pp. 375 and 268 figures ; Vol. II, pp. 304 and 265 figures. 82 kroner.

It is now more than forty years since Sophus Müller published *Vor Oldtid*, that admirable book which, generally in the German translation, has been a familiar tenant of every student's book-shelf. Since 1897 a number of new sites have been explored and many new methods of research and analysis have been discovered, so that it has become increasingly urgent that a full account should be given of Danish archaeology. The general reader has indeed been kept *au courant* of the more important developments by such comprehensive works as those of Ekwall, Shetelig and others. But these authors have aimed at covering so wide a field in Scandinavian archaeology that they have done far less than justice to the pre-eminent importance of Denmark. It is fitting and right therefore that three large quarto volumes, superbly equipped with illustrations, should now be devoted to Danish prehistory from the Palaeolithic period to the end of the Roman Empire.

The first two volumes are the subject of this present notice. They come from the pen of Johannes Brønsted, well known as the Director of the National Museum in Copenhagen, the able and learned successor of C. J. Thomsen, J. J. A. Worsaae and Sophus Müller: 'The goal of archaeology is the history of culture. Its material is the discoveries made in the ground'. This sentence, from the preface, might serve as a motto to the whole book.

The author shows equal ability in both departments of his subject. His descriptions of sites, objects, and the technique of manufacture, could not be more penetrating and exact, but it is the deductions and generalizations from his material which show the author at his very best: an historian as well as a prehistorian of the first rank. To follow him in all the details of his argument requires a competent knowledge of Danish; but as it may be long before any translation is available, the British archaeologist, even though he may lack this equipment, is advised to buy the book for the sake of its illustrations. He can work his way through the technical descriptions (easy just because they are technical) with the help of Magnussen's small dictionary. The following brief analysis may help him when he feels tempted to go further.

*The last part of this review-analysis will be published in our June number.

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The first part of volume 1 (pages 13 to 124) deals with the earlier stone age, i.e. from before 10,000 down to 3000 B.C.; the period before 10,000 in chapter 1.

There are traces of three glacial periods in Denmark. Of the first little can be said, but of the second there are visible remains in the 'Hill Islands' of the southwestern region: moraine formations which remained ice-free during the third period. In the intermediate time, between the second and third periods, climate was very temperate, the land level was higher; there may even have been a land-bridge between England and Jutland. It is quite possible that Jutland was inhabited in this interval and also in the third Ice Age itself, but there are no finds to prove this. Except for this southwestern corner, all Denmark still lay under the ice until the end of the third Ice Age. There is a graphic description of the final melting of the ice and of the way in which it shaped and sculptured the landscape to its final form. This melting of the ice occupied several thousand years. At the end of this time the relations of land to sea were very different from those existent today. The land-level of south Denmark had risen; that of north Denmark had sunk. The icy Yoldia Sea had now been formed. Climate was arctic with a midsummer temperature of 8 centigrade; vegetation and animal life were of a tundra character. The presence of man before 10,000 B.C. is not proved by positive evidence, but it is well remarked that the hunters of Meiendorf and Stellmoor near Hamburg were at the very door of Denmark in late Magdalenian days and may easily have penetrated further.

Chapter 2 takes us to 8000 B.C., the melting of the ice was followed by a short period of remarkable warmth, named after Allerød in north Zealand. Quickly returning cold, however, drove back trees and animals again to the milder regions, while the land reverted to tundra conditions. The mutual relations of land and sea continued to be unsettled, and were once violently upset by the breaking down of the Yoldia Sea, which forced itself an outlet to the ocean through middle Sweden. Of this a trace still remains in the modern lake Vänern. This change, however, was of short duration. A rise of the land closed in the Baltic again and turned it into a freshwater lake—the Ancylus Lake. What are now the Islands of Denmark formed a solid block with the mainland of Europe. The first certain evidence of man is a roughly shaped tanged arrow from Lyngby, datable to the Allerød period and comparable to flints found in the upper layers of Stellmoor. The complex of geographical, botanical and zoological relations at about 9000 B.C. can be studied in the table on page 124. At Lyngby and at each of six other sites was found an axe (fig. 3) fashioned of reindeer antlers. This Lyngby culture is compared with that of Ahrenburg and Stellmoor in the Hamburg region already mentioned, and represents a distinctly later development of the same School.

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Chapter 3 treats of the Continental Period, 8000 to 5000 B.C. The great cold has gone forever. The evidence of the deposits shows a summer temperature of 10 to 12 degrees centigrade at the beginning and 16 to 17 centigrade at the end of the period. The abundant plant and animal life was the same as that of north Germany at the same time (compare again the chart on page 124). And now comes the forest : first the birch and aspen, then soon the fir followed by the hazel, and finally by the oak, elm, lime. The steps in the progress of the forest are traced by pollen analysis. The shape of southern Scandinavia in its relation to the Baltic and the Continent is shown in figure 11. It is most interesting to observe how much land, which was once inhabited, today lies beneath the sea. Peat containing pollen is often brought up from what is now deep water. Southern England, Holland, north Germany, Denmark and south Sweden were all joined in a compact mass.

Instead of the sporadic finds of earlier periods, we now have a consecutive series of dwelling-settlements with copious deposits of implements. The first is Klosterlund in central Jutland. There the progress in equipment is marked by the quantity of flints. Especially notable is the flint-axe necessary to cope with the new forest trees. In previous periods the only axe-like implement had been made of reindeer antlers, sometimes sharpened. Now there appear three kinds of axes, two of which are manufactured from cores and the other from a flake or slice (figs. 12a, b, c). Scrapers, knives and borers of flint are shown in fig. 14, while fig. 15 illustrates microliths. Contemporary with Klosterlund are two others : Moselund and Hadsund, with a similar inventory. Comparing these with the Ahrensburg culture of two or three thousand years earlier, the advance in flint-work is notable. In a peat bog on another site at this period was found a complete skeleton of an aurochs with the traces of wounds from flint arrows.

The next stage in the Continental Period, which is sometimes called ' Boreal ', is known by the finds from the settlements generally included under the one title of Maglemose. At Mullerup in western Zealand were two settlements, at Holmegaard in south Zealand two more, and at Lundby in the same region, still another pair. Zealand it appears is the principal region for the Maglemose culture, the types of which are illustrated in figs. 21 to 44 (note the early occurrence of amber). The distribution of sites is shown in a map, fig. 20, which marks no particular moment but includes several stages of the Continental Period. The map in fig. 47 illustrates another region, viz. : Jutland, remarkable for a new school of flint industry (figs. 49 to 52), and a culture which seems to indicate a different population from that of Zealand. This Gudenaa culture was very long lived and survived into the later stone age.

Chapter 4 covers from 5000 to 3000 B.C. This, called the ' Atlantic period ',

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is marked by complete change in the relations of sea and land. Salt and fresh water have joined. In place of the Ancylus Lake we now have an inland salt-sea known as the Litorina, not so very unlike the modern Baltic. Sounds and Belts have appeared. Denmark has been split into islands (fig. 53). The change was not all accomplished in a moment. Some stages were probably catastrophic, but others certainly occupied many centuries. Four distinct risings of the sea can be noted between 4500 and 2500 B.C. Climate now changes and is no longer continental but oceanic in character, warm and damp. The change in climate brought change in the forest. The fir almost disappeared, being replaced by oak, elm and linden, with a wealth of smaller trees such as ash, rowan, cherry, willow, maple, with an underbrush of bushes and thorns. The two cultures noted in the previous chapter, Maglemose and Gudenaa (figs. 55, 56) continue.

Another culture now appears for the first time : it is the Ertebolle (map in fig. 54). This is practically limited to the coastal fringe as it then existed. The evidence of Ertebolle culture is found in the famous kitchen-middens (figs. 59-64) and some sites now submerged. Ertebolle implements of bone are interesting (fig. 71). The pottery in fig. 72 is not closely dated. Indeed the grading of dates is not possible within the long period (5000-2000 B.C.) part of which even overlaps into the Later Stone Age. D. RANDALL-MACIVER.

THE MASTABA OF MERERUKA. *By the Sakkarah Expedition, Field Director PRENTICE DUELL. Chicago : Oriental Institute Publications, vols. 31 and 39, 1938 (sic). 2 vols. pp. xxv, 18 and 219 plates. 90 dollars.*

A detailed publication of the Mastaba of Mereruka has long been desired by Egyptologists. The tomb was discovered by de Morgan in 1893 and described but briefly by Daressy; here and there individual paintings were published. The Antiquities Department in Cairo improved matters; a roof and several top-lights were provided, making it easily accessible to everyone who came to Sakkarah, and soon it was one of the most visited Mastabas of the district. It was all the more remarkable that no-one attempted a scientific publication. Breasted was the first to make the attempt, with the support of J. D. Rockefeller, jr., under the auspices of the Oriental Institute of Chicago. The tomb was completely surveyed and photographed in field-work lasting several years, under the direction of Duell, assisted by a staff of epigraphists, draughtsmen and photographers. The procedure used successfully by the Chicago expedition in Medinet Habu was employed also here : after the most careful epigraphical re-examination, the background of the photographs was removed by a chemical process, leaving only the line-drawing; this method is much more exact than if the work were traced or drawn completely in freehand. In

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the new publication likewise both photographs and line-drawings are generally shown together, so that really a very accurate picture is presented to the observer. The outstanding execution of the plates, including the coloured ones, rank this volume with the Medinet Habu and Karnak publications in the same series.

Mereruka—or Meri, to use his abbreviated name—was vizir under king Teti, the first king of the sixth dynasty, *c.* 2400 B.C. (not 2600, as stated in the publication). He built his tomb in the immediate neighbourhood of his master's pyramid, in front of its north side. Towards the end of the Old Kingdom the 'Mastaba' type of tomb had already become very much less rigid; instead of only a single room (the offering-room), the tombs now contained numerous chambers and corridors, like a dwelling-house. Mereruka added to his own tomb a special part for his wife, and further enlargements were afterwards made to provide for one of his sons. Thus the Mastaba contained above ground 21 rooms for Mereruka's own use (group A), six for his wife (group B), and five for his son (group C); with thirty-two rooms in all, the tomb of Mereruka must presumably have been the largest in Sakkarah. There have also been found below ground the burial chambers (empty) of Mereruka and his wife; that of his son has not yet been discovered. Not all the rooms were decorated with reliefs; in particular, the dark store-chambers remained without pictorial decoration. In the 219 plates of the publication are collected paintings from the various rooms forming group A only, together with some very beautiful, large, detailed photographs, and also, in outline only, the wall-paintings of the coffin-chamber. No indication is given whether a further volume will follow containing the material from groups B and C; it is to be hoped that this will be done, for the complete collection would be most desirable, even if it involved some repetition.

The text is divided into a longish preface by the late Professor Breasted and his coadjutor T. G. Allen, and an objective introduction by Duell. The preface gives an excellent survey of the history of the Sakkarah tomb-field, which unfortunately has never been worked over systematically and as a whole. The introduction is somewhat short in view of the importance of the tomb, and it is occasionally obvious that the author has no exact training in Egyptology. Thus many old interpretations of the friezes show that he is not familiar with the essence of Egyptian art: otherwise he could not state, for example, that the series of statues moves 'along the streets between the shops' in which the hand-workers go about their business. Such a spatial interpretation of a completely abstract conception ought no longer to be possible today. In particular, no mention is made of the texts; it is to be hoped that they will be treated later by an expert Egyptologist in a separate volume. However, this unassuming introduction is meant principally to form an objective approach to the pictures, which are by far the most important part.

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The plates are excellent, and will give pleasure to the non-specialist and stimulate the expert. Finally, a stylistic comparison is now made possible between the three great main tombs of Sakkarah—Ptah-hotep, Ti, and Mereruka. While the two older of these probably show with even greater purity the simple quiet style of the classical art of the Old Kingdom, in individual points and scenes the paintings from the tomb of Mereruka, which is rather later, pursue an independent course which in fact gives them their special charm. To such belong, for example, the representation of Mereruka with his wife, who is shown squatting on a divan playing the harp (pl. 95), or the attempts to represent the act of leading by the hand (pls. 104, 155), or the crossing of the arms upon the breast (pl. 9). Among the frequent scenes showing fishing on the marshes there are some wonderfully finished compositions (pls. 11, 19); individual figures (pl. 160), also heads in relief, reproduced in most beautiful detail (pls. 16, 151), show the surpassing heights reached by Egyptian relief even as early as the sixth dynasty. In this way the two beautiful volumes of plates supply rich material to the historian of art, and a precious feast to the eye of everyone who takes pleasure in the magnificent art of the pyramid era. We cannot be grateful enough to the Oriental Institute in Chicago for having published the paintings of the tomb of Mereruka in so exemplary a fashion. A. SCHARFF.

KHORSABAD. Part II: The Citadel and the Town. By GORDON LOUD and CHARLES B. ALTMAN. *University of Chicago, Oriental Institute Publications*, vol. 40. 1938. pp. 115 and 91 plates. 30 dollars.

Khorsabad, known in antiquity as Dur Sharrukin, was the residence of King Sargon of Assyria 722-705 B.C. The site was investigated by Botta and Price about the middle of the 19th century, and has now been examined afresh by the Oriental Institute of the University of Chicago, under the direction of G. Loud, with C. B. Altman as architect, partly under the general supervision of H. Frankfort, director of the Tell Asmar excavation. The second* volume of this great publication contains a very careful account, with special emphasis upon architectural matters, of the excavations in the town and on the Citadel, together with the temple of the god Nabu. In contrast to most of the Egyptian publications in this series, large space is allotted to the text, in particular to the architectural descriptions and the account of finds. Altman's plans and reconstructions give an impression of great reliability; the coloured reproductions of painted plaster-work, with their strident hues, grate somewhat upon the modern eye, but they certainly correspond with the reality. This extremely informative volume is well worthy of a place among the stately and distinguished publications, in all fields, of the Oriental Institute of Chicago. A. SCHARFF.

* Volume I was reviewed in *ANTIQUITY*, 1939, XIII, 246.

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MOSTAGEDDA AND THE TASIAN CULTURE. British Museum Expedition* to Middle Egypt, First and Second Years (1928, 1929). By GUY BRUNTON. 1937.

In his expedition to Middle Egypt Mr Brunton had as his goal no royal tomb, no capital city, no impressive temple, no rich necropolis with entrancing paintings, but a provincial burial-ground, where probably none but poor folk ever lay. In 1924-5 he had already conducted excavations near Badari, on the east bank of the Nile south of Assiut, commissioned at the time by the British School of Archaeology in Egypt. He then decided to continue the investigation at his own expense, as it promised still further results, and the present volume shows that his courage reaped a fine reward.

Readers of ANTIQUITY will not need a very detailed account of the book, for they may be referred to Mr Brunton's own paper printed in volume III, 456-67. I may repeat briefly here that the object of investigation was a large cemetery, affording very valuable material from the earliest stage of the Egyptian neolithic period. It not only enabled us to know more of the second oldest stratum of prehistoric Egyptian culture, i.e. the Badari civilization, but, more important still, as is shown by the sub-title of the book, first made it possible for us to form a picture of upper Egypt in the earliest neolithic stage, with which we have only recently become acquainted. Previously our knowledge of this 'Tasian' culture was confined to a few isolated finds; now Mr Brunton has discovered some fifty graves belonging to it, practically all containing offerings and some with skeletons which could be examined. A coherent sketch of this culture also was given by the excavator in the paper already mentioned. There are still some interesting problems to be solved, notably the possible connexion of the beakers found there (which differ remarkably from the otherwise undecorated pottery and from the generally still simple ware of the Badari culture which followed it), with a German group of finds usually known as Michelsberg, hitherto dated substantially later. It is interesting that a clear differentiation can be established between the Tasian and the Badari skull-type.

Graves of all periods were discovered, beginning with the earliest culture of the Nile valley, and extending through the familiar prehistoric period and the age of the pyramid builders right down to Coptic times. These later periods are so well known that little new evidence is afforded by the graves, which are poor and often few in number. But in one direction Mostagedda yielded a surprise. In the period succeeding the fall of the Middle Kingdom, c. 1900 B.C., Nubians from the south invaded the Nile valley. The 'pan-graves' of these

* Although the expedition is thus described we are informed that the British Museum contributed nothing to the expedition except its patronage. The whole costs of excavation and of the publication of this report were borne by the author.—EDITOR.

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invaders have long been known, although only a few of their cemeteries have been found. Here, in Middle Egypt, Mr Brunton has now established the largest burial-ground of the kind so far discovered. The clay ware of these barbarians, like their whole culture, is markedly divergent from the fine vessels of the historical Egyptians. The dating of this invasion is helped by the recent discovery of an axe, on which is preserved the name of one of the kings hitherto only incompletely ascertained, one of those who ruled in short successive reigns not very long after the break-up of the central royal power. Unfortunately the photograph of this fragment is so small that the name can only be deciphered with difficulty. Apart from this one point, however, one can feel nothing but the highest admiration for the method of excavation and the manner in which its results are presented.

Today, if we look at older publications, they confirm us in our belief that precisely those questions which now seem to us decisive were then passed over as of no significance. Certainly we cannot tell what future scholars will regard as important, but a book of this sort, forming such an exemplary publication of material, gives a pleasant confidence that even the distant inquirer of the future will find all his questions answered. But this is not all ; it is at least as important that our inquirer will be able to discover everything in the text : and here he will find an index and a lucid and consistent arrangement of the material, which is doubly valuable just because the excavations have yielded finds from all periods. In conclusion, mention must be made of the cooperation of two other scholars, Mr T. Midgley (of the Chadwick Museum, Bolton) in the section dealing with cloth and matting, and Dr G. M. Morant in connexion with prehistoric skulls and their bearing on Egyptian racial problems. All animal remains, all plants, contents of vessels, matters of anatomical interest in connexion with the skeletons, have been investigated by experts and treated with such detail as their significance warrants. In spite of this thorough manner of treatment, the book is written in good style and will offer something to everyone who is at all interested in early Egyptian culture.

HELLMUT BRUNNER.

THE CULL CHINESE BRONZES. By PERCEVAL YETTS. *University of London, Courtauld Institute of Art*, 1939. pp. 197, 44 figures and 35 plates. Price not stated.

In his Catalogue of the Chinese Bronzes of the Eumorfopoulos Collection (1929-30), the greater part now in the British and the Victoria and Albert Museums, Professor Yetts discussed for the first time fully and seriously (in a European language) a number of questions, dealing especially with the investigation of Chinese ritual bronzes, mirrors, bells and weapons. The subjects

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of the three chapters of the first volume of the Catalogue are Inscriptions, Technique, Classes and Uses. In his new work on the Cull Collection the author is again mainly occupied with inscriptions and classes. Once more we realize what enormous difficulties have to be overcome in the course of such work, in order to obtain a sure base upon which to build. The translation of the archaic inscriptions can, in many ways, be compared to the solution of a puzzle, and research workers hold widely divergent views as to their result. It is often difficult to produce reliable data for the nomenclature and uses of the ritual bronzes, and it may be suggested that where definite knowledge is lacking, a conventional definition should be made.

In the Eumorfopoulos Catalogue, there is scarcely a single early bronze that the author dates with certainty. The great majority of attributions are given as 'probable' or 'doubtful'. Attributions to the Shang-Yin dynasty are completely lacking. In the Cull Catalogue nearly every one of the thirty objects dealt with is chronologically dated without any qualification, though the period to which it is assigned may be of considerable length. Here is evidence of the enormous progress that research in this field has made during the last decade. Both the author and the Swedish School have greatly contributed to this success, the excavations at Anyang providing an impetus from the East, while in the West the Stockholm Exhibition of Chinese Bronzes in 1933 was of prime importance. Then followed the Exhibitions in Paris (1934), London (1935-36) and New York (1938), all of them memorable events and milestones on the road to knowledge.

Professor Yetts sets forth the following classification of archaic bronzes up to the time of the Ch'in dynasty (221-207 B.C.): 'The First Phase includes bronzes displaying the standards established in the Shang-Yin period, and it lasted from earliest times to the tenth century B.C. The Second Phase includes the style distinctive of Chou culture, and it lasted from the tenth century to dates which varied in different parts of the country. The Third Phase corresponds generally to what is known as the Ch'in or Huai style'. Professor Karlgren, the indefatigable Swedish scholar, gives the following division in his latest publication (*Oestasiatiska Samlingarna*, Bulletin no. 9, 1937, p. 5). 'Archaic period: Yin, prior to 1122 B.C.; Yin-Chou 1122 to circa 950 B.C.; Middle Chou: circa 950 to circa 650 B.C. (with occasional extensions considerably later); Huai: circa 650 to circa 200 B.C.' It will be seen that both scholars have arrived at practically the same conclusions. The division which the Chinese give in their catalogue of Chinese Government Exhibits for the International Exhibition of Chinese Art in London, also shows no essential differences. If the Chinese make use of certain historical periods for naming their divisions, they are merely following a European practice, in which historical divisions do

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not correspond precisely with the artistic evolution. Professor Yetts' classification has the advantage of greater simplicity and the widest scope; periods in art can never be exactly divided. And it must not be forgotten on what slender foundations all our knowledge of early Chinese times is built.

In the Cull Catalogue must be noted not only the progress with regard to the dating of the bronzes, but also the still more difficult matter of the interpretation of the significance of their decoration. For example, the author, describing a beautiful mirror of the Han time (no. 28), a type which up to the present has been provisionally designated as a T L V mirror (owing to certain similarities of details of its ornament to the letters T L V), gives a very convincing interpretation of nearly the whole of the extremely complicated decoration. This takes up 49 pages, that is to say, more than a quarter the whole book. No. 28 is then, in short, 'a compendium of cosmology, and, as may be gathered from the inscription, it is a compendium of astrology as well' (p. 165). Professor Yetts suggests the designation of 'sun-dial' for such mirrors, or if they are as comprehensive as no. 28, then 'sun-dial and cosmic mirror'. We are therefore in the fortunate position of being able to discard the former rather fanciful designation. The author also discusses fully one of the well known 'beast and grapes' mirrors. He discusses the date—not Han but T'ang; the ornamentation, due to western influence—and even gives a reproduction of a detail of the Syrian Mshatta Palace façade, in the Kaiser Friedrich Museum in Berlin, in order to demonstrate clearly the western influence. The 'beast and grapes' mirrors are evidently another example of the surprisingly strong influence of the art of Sassanid Persia on T'ang art, which combined with Indian influences was so strong that it can be said that Chinese art was never so un-Chinese as at this period. It would have been welcome if the author had entered still more fully into the symbolism of the archaic bronzes and defined his attitude to the learned writings of Professor Carl Hentze, the Belgian sinologue, which have appeared during the last few years. Here, in spite of some exaggeration, it seems that new paths have been opened, which may lead to an understanding of the decoration of early Chinese bronzes, in which, doubtless, every motive bore a symbolical or magical significance.

Although the specimens in the Cull Collection cannot be compared with the Eumorfopoulos bronzes, either in quality or in number, it contains, among others, fourteen ritual vessels of which at least half a dozen are of the utmost importance. Most of the works belong to the First Phase. The Second Phase is not represented. The author gives a careful description of each object. The wine container, *yu* no. 3, a work of the First Phase, and the two vessels *hu* no. 12, which were used for similar purposes, works of the Third Phase, appear to him of most importance, both from the point of view of style and on account of the

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inscriptions they bear. With regard to the *hu* which the author has already published in the *Burlington Magazine* (1937) he writes : ' Students of Chinese bronzes seek especially to authenticate the beginnings of the Third Phase. I claim for no. 12 that it provides a new criterion ; it has full measure of the group's characteristics, and allusions in its inscriptions fix not only the oldest definite date so far known for any member of the group, but indications of locality as well ' (p. 53). ' In conclusion, the date 482 B.C. or soon afterwards is almost certain, and the Chin State is the probable locality ' (p. 75). Perhaps it is of less importance whether these two *hu* supply ' the oldest definite date ' for works of the late Chou or Huai style (c. 7th-3rd century B.C.) or whether the famous so-called *piao* bells are older (Karlgren insists on the date 550 B.C. for the bells, *Oestasiatiska Samlingarna Bulletin* no. 9, p. 104; Yetts pleads for 398 B.C., p. 73) than the fact that they both offer a further proof that this characteristic style really goes back to the fifth century or even earlier.

Besides descriptions and explanations of the objects and penetrating analyses and interpretations of the inscriptions, we find in the text much of fundamental interest concerning Chinese ritual bronzes and on early Chinese art and culture.

In the preface the author announces a new and comprehensive work, *Ritual Bronzes of Ancient China*, the appearance of which will be looked forward to with eagerness, and in which assuredly many of these and other subjects will be dealt with still more fully. If the Chinese themselves consider the archaic bronzes in the first place as documents of their history and therefore pay the greatest attention to the inscriptions—Chinese literature on this subject is tremendous—the Westerner, on the other hand, has been accustomed to regard the older bronzes more as monuments of a great art-period. Above all, he desires to understand the origin, the development and the significance of each specific form. He wants to know how far the enthusiasm of the Sung time (960-1279) for the ancient bronzes led to the copying of the earlier material. Are we sure that we are not often, perhaps more often than we suppose, in a similar position to, say Winckelmann, the enthusiastic admirer of antique art, who actually had seen for the most part only Roman copies of Greek originals.

A word of appreciation must be added regarding the excellent make-up of the Catalogue, and the bibliography. The typography is especially good. The end-papers are decorated with ornamental motives of the Third Phase, by the author himself. All Chinese words and titles are given in Chinese characters, and many inscriptions and details, most carefully copied, illustrate the text. The bibliography comprises 132 references and represents almost the whole of the literature on the subject, the Chinese references by far predominating.

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This volume by Professor Yetts is undoubtedly a valuable contribution to the arduous task of investigating the unique bronze art of early China.

WILLIAM COHN.

DEMIRCI-HÜYÜK, EINE VORGESCHICHTLICHE SIEDLUNG AN DER PHRYGISCH-BITHYNISCHEN GRENZE. By KURT BITTEL and HEINZ OTTO. *Archäologisches Institut des deutschen Reiches, Berlin*, 1939. pp. 35 and 15 plates.

Many who have travelled in Anatolia will recollect the excitement which they experienced when mounting, by rail or road, from the fertile coastal regions to the steppes of the interior. The transition, everywhere striking, is particularly abrupt on the route, used in ancient as in modern times, from Mudanya to Ankara and thence to Bogazköy, in other words, from the Sea of Marmora to the present-day capital and its Hittite predecessor. Dr Bittel, journeying that way in 1936 with Dr Dehn, used the opportunity to good advantage, for he not only identified many sites hitherto unknown, but also made certain original observations on the manner in which their character changed with their environment.

It is not surprising that a geographical boundary as strongly marked as the one in question should have become a political frontier in the thirteenth century, or served to define provinces in the Roman period, or stemmed the diffusion of Hellenic culture at a still earlier date. To what extent it modified the spread of prehistoric civilizations we cannot say: at any rate, our authors have noted its correspondence with certain fundamental changes in the settlement-types. On the uplands, buried towns and villages assume the form of conical mounds—their Turkish name is hüyük—and they are plentiful and conspicuous. On the coasts, with the exception of the region round the Dardanelles, such mounds are rare; the habitations have left small traces, and two reasons are suggested for this. The first is that the houses there had been made of wood, which is perishable (or, I would add, of stone, which can be removed); the second is that lands within reach of the sea are vulnerable, and their towns short-lived. Above, on the steppes, mud-brick provided building material; it accumulated rapidly, and a more settled population was able to occupy the same spot again and again. All this is convincing; nor is it affected by the somewhat revolutionary theory advanced on p. 1 (note 1), that the central parts of Turkey were scarcely more afforested in antiquity than they are today.

Demirci-Hüyük itself is situated on the plateau, west of Eski Şehir (Dorylaion), near which our road joins one leading to the south; east of Bozüyük, the previous type-site for the district; and within a short distance of numerous other mounds. As Bozüyük was imperfectly investigated over fifty

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years ago, the value of a new standard is obvious, and the evidence provided by Demirci-Hüyük most welcome. Though the strata which the excavators distinguished with great accuracy do not show marked changes of culture, covering only the period between 3000 or a little earlier and 2300 B.C., they have yielded a fine series of pottery and a useful quantity of statuettes and implements. These enable us to estimate the relation of the settlement and its neighbours to others, so that we can safely regard it as connected with the west Anatolian civilization more closely than with the eastern, while possessing just that degree of individuality which we should expect. The most interesting finds are, perhaps, the fragments of spouted vases of the 'tea-pot' class, hitherto associated with Hittite wares and now present in a third millennium context. Can they be one of the missing links between Turkey and Persia? It repays to compare pl. 7, 5 with some of the examples from Shah Tepe. The detection of foreign contacts is, however, rendered difficult by the absence of metal in any form.

As the campaigns were short, no buildings of note were uncovered. These may be cleared at a later date, since digging was conscientiously and discreetly confined to the section exposed by the modern road and to a small area in the uppermost level.

The discovery of battle-axes in the adjacent hüyük, Aharköy, gives Dr Bittel the opportunity of discussing the diffusion of these weapons in the Near and Middle East, and of lodging a protest against the misguided theory that they mark a nordic immigration at the end of the third millennium. To such a theory they can lend no support, for specimens from Thermi, Tell Agrab, and Kish are earlier than 2600 B.C., and the type was thoroughly at home throughout Anatolia.

The section on battle-axes forms the epilogue to a book short, but from many points of view interesting. I have been particularly impressed by the author's recommendation that workers in Turkey should turn their attention to topography now that the outlines of a chronological scheme have been established. This verdict has great weight, since it comes from authorities who have themselves contributed to our knowledge of both departments. W. LAMB.

DIE BÄUERLICHE SIEDLUNG DES RAVENSBERGER LANDES BIS 1770. (Arbeiten des Geographischen Kommission im Provinzialinstitut für Westfälische Landes- und Volkskunde, 1). By HANS RIEPENHAUSEN. *Münster in Westfalen*, 1938. pp. 140 and 3 maps. RM 7.50.

This work is the fruit of an exhaustive investigation into the *Siedlungs-geschichte* of an area, some 15 miles by 22 miles in extent, in northeast Westphalia. The distribution-map of different types of settlement in Westphalia was sketched

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by Martiny in an important contribution to the *Forschungen zur deutschen Landes- u. Volkskunde* some thirteen years ago, and the present work illustrates Martiny's main conclusions without modifying them except in detail. There is nevertheless a good deal that is of technical interest to the student of English agricultural history in a work of this kind for too little attention is paid in this country to the discipline of local history, on the successful synthesis of which all well-founded generalization on the nature of early English agricultural systems and types of settlement must ultimately depend.

Herr Riepenhausen's materials are the *Kataster* of 1770 and the *Urbar* of 1550. He has nothing to say about the possible existence of archaeological evidence of field-systems in his area, or of the use to which medieval charters and extents might be put if related to the later materials. The medieval scene is in fact reconstructed from modern materials, chiefly by means of an analysis of place-names and of the distribution of types of settlement, both of which have for the purpose of this enquiry been subjected to a rough chronological scheme. The limitations of these methods are obvious, but it is interesting to see how much can still be done with Meitzen's methods in Meitzen's own country. E.B.

HUDŪD AL-'ĀLAM, a Persian Geography, 372 A.H. (A.D. 982). Translated and explained by V. MINORSKY. 12 maps. *Oxford University Press* for E. J. W. Gibb Memorial Series, 1937. 25s.

The story attaching to the precious work of which the present volume is a translation is indeed romantic. In 1892 a Russian orientalist named Tumansky while in Turkestan was given an old manuscript which contained four treatises. On examination the first treatise turned out to be the *Hudūd-al-'Ālam*, i.e. 'the Regions of the World', which was compiled in A.D. 982. Though use was made of photographs and transcripts of this manuscript the text was never published till 1930, when V. V. Barthold published a reproduction with an introduction and index. Barthold died in the following year, and thus never carried out his intention of publishing an annotated translation. This work has now been most adequately performed by Professor V. Minorsky and published by the Gibb Memorial Trustees. It certainly could not have fallen into better hands, and the learned Professor has placed all students of Islamic history and geography under a lasting obligation. The importance of the text itself cannot be over-estimated, seeing that it is one of the earliest Muslim geographies that have been found, and was till its discovery quite unknown.

Minorsky's edition begins with a translation of Barthold's important introduction; this is followed by a closely literal translation in large type of 100 pages of the whole text which comprises 61 sections; then comes Minorsky's

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elaborate Commentary, which occupies 300 pages in small type ; and finally there is an index covering 40 pages.

I have given these figures in order to indicate the comprehensiveness of the Commentary, which in conjunction with the index contributes a veritable encyclopædia of Islamic geography. Seeing that the *Hudūd-al-‘Ālam* deals with the whole of Asia and parts of Africa and Europe, one can imagine the amount of research which was required in order to identify all the place-names and verify their descriptions. Professor Minorsky has spared no pains to make his Commentary as complete as possible, and has consulted for this purpose the leading living authorities on each country, quite apart from his study of all available published material. The difficulties of his task were increased by the circumstance that many of the places named have totally disappeared or have received new names.

It is impossible to quote from this Commentary, but let it suffice to say that this volume must in future find its place side by side with the Encyclopædia of Islam, to which it forms not merely a necessary pendant, but also an invaluable supplement. Professor Minorsky deserves the warmest congratulation on his masterly performance, and the Gibb Memorial Trustees may well be proud of having added this outstanding volume to their valuable publications.

E. DENISON ROSS.

ALTAMIRA : a note upon the palaeolithic paintings in the Cave of Altamira, near Santillane del Mar in the Spanish province of Santander, with a colotype in colour reproducing all the principal paintings. By W. H. RIDDELL. *Oliver & Boyd, 98 Gt. Russell Street, W.C.* 1938. pp. 50. 3s 6d.

Mr Riddell is perhaps too modest when he tells us that he is no prehistorian. He has at any rate other qualifications for acting as an interpreter of the work of the hunter-artists. He is himself an artist and a hunter—an expert and widely experienced hunter, and an equally expert painter of the animals he has hunted and watched. He has also watched his uncivilized companions of the chase, and knows how savages think and see. In fact he has a first-hand knowledge of his subject ; and this has enabled him to produce an unusually entertaining little book. Folded in a pocket at the end is a very careful coloured drawing of the whole Altamira ceiling, which shows the polychromes in their proportional relationship to each other and on a scale sufficient to enable one easily to follow what he has to say about the subject and treatment of each design. After discussing how and why they were painted, he goes on to consider ways and means of keeping Upper Palaeolithic larders supplied, explaining why cold conditions were favourable, and why a softer climate meant a harder life. The book is short ; but there is a lot in it.

A.B.

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DIE VOGELFIBELN DER GERMANISCHEN VÖLKERWANDERUNGZEIT. By GERTRUD THIRY. Bonn, Ludwig Röhrscheid Verlag, 1938. pp. 144, 35 plates, 7 maps 23.50 RM.

This is a very competent and thorough survey of the Teutonic jewelled 'bird-brooch' from the 'feathered' cloisonné type of c. A.D. 400 to the debased variants of c. 600. The author's classification is in every respect satisfactory, and her work will be welcomed gratefully not only by students of the Dark Ages in western Europe, but by all museum-curators who have to date and label brooches in this extensive group. The distribution-maps are the only disappointing feature in a book which, apart from these untidy and confusing sketches, is a really notable example of persistent and industrious research into a cleverly isolated problem. The author is certainly an archaeologist whose future work will command an attentive respect.

T. D. KENDRICK.

THE JEMEZ PUEBLO OF UNSHAGI, NEW MEXICO, with notes on the earlier excavations at 'Amoxiumqua' and Giusewa. By PAUL REITER, University of New Mexico, Santa Fe, 1938. 2 v., pp. 211, 23 plates. 3 dollars.

This monograph deals not only with the Pueblo Unshagi proper, but also with the area known as Jemez province in the northwestern part of the State of New Mexico. It is a region of high mesas, forested valleys and mountain peaks. The only modern Jemez site in that area is Walatowa; Unshagi seems to have been abandoned about 1628, after a residence of 250 years.

The author has used every method available for his reconstruction of Jemez history; though he mainly uses archaeology as a result of very thorough excavation work. He does not overlook the traditional or historical evidence, nor such auxiliary technics as 'dendrochronology', the determination of chronology from tree-rings. The book gives an interesting sketch of the material culture and of the evolution of a native society in the Pueblo area.

JACQUES SOUSTELLE.

THE SWEDISH MESSENIAN EXPEDITION. By M. NATAN VALMIN. Oxford University Press, 1938. pp. xv, 484, 37 plates, 7 plans and 100 text-figures. £4 4s.

In this work are described the excavations conducted by the Swedish Messenian Expedition at Malthi, Hagios Floros and Korone.

Part I deals with the prehistoric site of Malthi (of which the successive settlements range from Late Neolithic to Late Helladic III), the burials, the pottery, miscellaneous finds, including a detailed examination of weights and script signs, followed by conclusions, an appendix containing analyses of

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metals and ore and a second appendix describing a deposit of Byzantine coins. This account of the prehistoric site occupies 415 pages and forms the major part of the book.

Part II (pp. 419-65) is concerned with the excavation of a small sanctuary at Hagios Floros (which lies east of Ithome) where, as was established by two inscriptions, there existed a cult of the river-god Pamisos, and where, as the character of the votive offerings showed, children were brought for healing at the springs. The sanctuary flourished from the Late Archaic to the Roman Imperial Age.

Part III (pp. 469-475) describes a mosaic floor lying three miles north of Korone, datable to the time of Nero.

The prehistoric site of Malthi is outstanding because of the completeness with which the Middle and Late Helladic settlements were found to have been preserved, the plans of each being recoverable and the walls remaining standing in many cases to several courses. A good number of houses belonging to the two earlier settlements also were found. These fixed remains being accompanied by a reliable stratification of pottery, small objects, etc., a continuous and clear record is provided of the life of a small town, provincial but not by any means in a backwater. In respect of completeness, among excavated and published sites in Greece only Gournia and Thermi are comparable; the latter, however, belongs rather to the Troadic-Anatolian sphere of civilization.

Almost every aspect of archaeology is in fact illuminated by the fresh material at Malthi; daily life and customs by the house-plans (it is to be noted that apsidal houses are characteristic of the Late Neolithic to Early Helladic I phase as well as of the Middle Helladic), by objects of daily use (perforated axes are here found in Early Helladic houses), a smith's forge (the manufacture of iron objects before the end of the Mycenaean Age will be noted), a series of burials and a rudimentary grave-circle; the potter's art by a fairly normal pottery-series (note however that the forms of Minyan are anticipated in the Late Neolithic period, that there are no ringed Minyan goblet stems, that the sequence is Minyan (MH I), Argive Minyan (MH II), grey Minyan (MH III), yellow Minyan (MH III-LH I) and that the latter persists to the end of the LH III period, that matt-paint has three phases, lustrous, thick and again lustrous, that many LH III kylikes have swollen stems, a provincial peculiarity (Ithaca, Cephallenia, Cyprus) that stirrup-vases and the Granary Class are very rare, that autochthonous pottery, termed unaccountably 'Adriatic' by the author, persists from first to last side by side with the standard series, influencing and being influenced by it). Finally light is thrown on ethnological questions by the evidence for static or transitory elements in the population supplied by changes in the house-plans, pottery, signs of destruction and the like.

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Thus most of the familiar problems of Aegean prehistory are affected by the new material from Malthi, and it is evident that students of the subject must beg or borrow (for few will be able to buy) this essential book.

Though the book is clearly the product of most careful observation and recording, a few criticisms suggest themselves.

In the first place, though we cannot be too grateful to the author for presenting his work in English, it is to be regretted, and, in view of the assistance which is claimed in the final paragraph of the Introduction, surprising that the English is in general faulty, sometimes even to the point of being unintelligible.

Secondly, the descriptions are intolerably long with the result that the book is materially cumbrous and intellectually fatiguing. Given the excellent stone for stone plan (I) there is no need for the laborious recording of details which should, if considered indispensable, be confined, in smaller type, to an appendix. Thus bulk and price could have been reduced.

Thirdly, the plates with some exceptions, notably the coloured ones, are not really satisfactory. In the views, the shadows are too black and lack luminosity; in the case of vases, the surface-texture might have been better reproduced, and the free-hand reconstructions from fragments are ill-drawn and untidy; in the case of small objects many of the illustrations are too small to have any value; the disparity of scale of objects on the same plate, even when measurements are given in the text, is trying (in some case scale is not given either in plate or text), and the mixing of vases of different periods might have been avoided. Finally, captions at the foot of each plate with references to the text would have been of great assistance.

W. A. HEURTLEY.

STUDIES IN EARLY CHINESE CULTURE. By HERLEE GLESSNER CREEL. First Series. *Kegan Paul, Trench, Trubner*, 1938. pp. xxii, 266. 15s.

In his book, *The Birth of China*, published in 1936, Mr Creel says: 'This book is not written for specialists. Specialists who desire full proof and meticulous documentation for the material treated in this book will find them in my technical work, *Studies in Early Chinese Culture*, of which the first volume is completed and now in process of publication'. It is therefore from this point of view that we have to consider the *Studies*. They introduce us, so to say, into the workshop of the author, but they practically go over the same ground as the former work. They are however, carried out on a larger scale. Numerous questions are raised therein, controversy plays a not inconsiderable part, and there are many lengthy annotations. At the same time, the Chou period has been relegated into the background, whereas the so-called prehistoric time is treated more elaborately. Although the author discusses all problems at length,

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there remains much of the impetuous American vigour which distinguished his former book. He almost entreates the reader to believe him and he emphasizes again and again the painstaking labour involved in completing his task. We could nearly imagine that all the research work and all the criticism on this subject have hardly ever been seriously dealt with before.

The first chapter treats of the materials available for the study of the history and the culture of the Shang period ('Traditional Chronology, 1765-1122'). The great progress which has been made in research work regarding China, during the last two decades, is due to the fact that now thousands of well compiled 'oracle bones' and numerous sacrificial bronze vessels, 'excavated under scientific conditions', provide valuable contemporary data. The chapter is divided into three sections: inscribed bones, excavations, and books of the Shang period. The author discusses in detail the extensive and important Chinese literature on oracle-bones and he gives a full report of the excavations at Anyang, the Shang capital, at which he was present on various occasions. Naturally, Mr Creel, as a sinologue, dwells longest upon the literary sources. He arrives at the conclusion that perhaps only the Shang Sung of the Shih Ching can be considered a real Shang production.

The second chapter investigates the evidence we have of the oldest Chinese dynasty, the Hsia dynasty ('Traditional Chronology, 2205-1766'). Mr Creel states: . . . 'not pure fiction', but 'there is no reference in the bone inscriptions to a Hsia state or dynasty. Nor is the character found in the original text of the I Ching, nor in early Chou bronze inscriptions'.

The third chapter describes the race, origin and the area in which the Shang culture flourished. The assumption that the Shang people belong to the same Mongoloid racial stock as the Neolithic inhabitants of North China Mr Creel considers substantiated, and he also claims to trace, more or less clearly, connexions between the Shang and the Neolithic culture. If these opinions could stand the test of criticism, they would be of outstanding importance.

The section treating of 'The Origins of the Shang Culture' is the most extensive and suggestive of the whole work. The excavations by Andersson which were followed by those of the Chinese National Research Institute, have brought an enormous amount of material to light. Mr Creel holds the Li tripod to be a peculiar characteristic of the entire northeastern culture area and he goes thoroughly into all questions concerning this vessel, of which similar types are still made in present-day China.

The final sections are devoted to early Chinese art, especially to the bronzes. Instructive as they are, they would certainly have worn a somewhat different aspect today in view of the considerable number of newly published works which were at that time unknown to the author.

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It must be unreservedly appreciated that the problems of early China are exhaustively examined for the first time in this book, and we have to admire the efforts of the author. But it must not be forgotten that many of his conclusions are still more or less hypothetical and await final corroboration.

When one considers the formidable six-page bibliography, which according to the author is not even a complete list of the books he used, the overwhelming majority of which is Chinese, one fully realises the great difficulties which the multiplicity of ideas on the most important problems still offer. The literature in European languages seems to be somewhat neglected by the author, who holds the research work achieved by Chinese scholars in very high estimation. It is however likely that some of the western publications were not at his disposal. In any case the works of Bachhofer, Hentze, Karlgren, Loehr, Maspero, and Yetts ought to have been taken into greater consideration today.

WILLIAM COHN.

ATHENIAN TRIBUTE LISTS. By B. D. MERITT, H. T. WADE-GERY and M. F. MCGREGOR. Vol. I, *pp.* xxxii, 605, 25 *plates and 192 text-figs.* For the American School of Classical Studies at Athens. *Harvard University Press, Cambridge, Mass., 1939. 15 dollars.*

In the process by which the Confederacy of Delos was gradually transformed into an Empire controlled by Athens an event of momentous importance took place in the year 454-3 B.C., when, barely twenty-five years after its inception, the Treasury and funds of the Confederacy were removed, for greater security and convenience of administration, from Delos to Athens. Henceforward they were controlled by Athenian officials and placed under the protection of the goddess Athena, and as a special offering to their protector a tithe, or quota, of $\frac{1}{60}$ (=1 *mina per talent*) was set aside every year from the tribute paid by each of the members. Details of this quota were recorded annually by the Treasurers from 454-3 onwards on marble stelai erected on the Acropolis, and it is primarily with these quota-lists that the present volume deals.

The history of their discovery and identification begins about a century ago, when numerous fragments came to light during the task of clearing the Acropolis of later buildings and accumulated rubbish, and their numbers have steadily grown as the result of more recent excavation, coupled with intensive research. Thus the reconstruction of the original form and contents of these stelai, and the more exact interpretation of the historical evidence which they yield, represent a continuous advance towards a fuller understanding of the history and organization of the Athenian Empire. Historians have long since realized the unique value of this contemporary evidence, and it is instructive to study the progress made since the sceptical pronouncements of Grote (*History*

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of Greece, 1872, IV, 492, *e.g.*, that the hypotheses of Boeckh in the second edition of his *Public Economy* 'appear to me more ingenious than convincing', or 'as to the amount of tribute . . . nothing certain appears to me obtainable from these inscriptions', though, had the lists been complete 'we should have acquired important and authentic information respecting the Athenian Tribute-system'). Grote, it must be admitted, like Jowett a few years later, in the introduction to his *Thucydides*, was sadly out of touch with, not to say suspicious of, the progress of German scholarship in this field. More recent progress may be illustrated by a glance at the first stele, originally an immense monolithic block of marble, nearly 11 feet high and over 3 feet 6 inches wide, and 1 foot 3 inches thick, on which were engraved the quota of the first fifteen years after the transference to Athens. In 1873 Kirchhoff was able to attribute 120 fragments to it (*Inscriptiones Graecae*, vol. 1), but in the latest reconstruction by Meritt and his colleagues there are no less than 180, including several which have unfortunately disappeared since they were first copied a century ago. In fact the documentation of these lost fragments is not the least valuable of the services to learning afforded in the detailed inventory of all the fragments which is given in the first chapter. Again, it is due to recent discoveries by Wade-Gery that we now know, firstly, that the narrow right-hand face contained at the top a summation of the first year's quota (a practice not again repeated), and not, as hitherto supposed, a heading in abnormal form for the list of the seventh year; and secondly, that one year's quota has been omitted altogether, since the short list of entries previously ascribed to year VII is now seen to be an overflow from the list of year II on the broad obverse face. Meritt, moreover, has established that the missing year must have been 449-8, and that the hiatus must be due to the conclusion of the Peace of Kallias with Persia, which might indeed, had Athens been so minded, have justified the dissolution of the Confederacy. As another example of progress we may note the stages in the reconstruction of the third stele (430-29), the earliest survivor of those which contain the record of one year only. The dates of publication of its eight fragments are 1835, 1853, 1896 (2), 1908, 1909, 1910, and 1939, the last having come to light, like several others which belong to the series, in the American excavations of the Athenian Agora.

Besides all the known fragments of the quota-lists this volume contains reproductions and transcripts of all the other Attic inscriptions relating directly or indirectly to the assessment and collection of tribute from the Confederacy. Some of these have already been restored and discussed in separate monographs, such as the famous Assessment-decree of 425-4, whereby the total sum demanded was increased—perhaps fully three-fold—to a total of nearly 1500 Talents, to meet the growing costs of the Peloponnesian War; and the two decrees relating

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to methods of collection, etc., discussed in Meritt's recent *Documents on Athenian Tribute*. There is also a valuable chapter of *Testimonia*, generously printed in full, comprising pertinent extracts from the Greek historians and orators, from Aristophanes, and others (note particularly the new restorations proposed in the papyrus-fragment known as *Anonymus Argentinensis*, on p. 572), as well as from other inscriptions relating more generally to Athenian imperial affairs. The *Gazetteer* (ch. ix), comprising the names of all the states known to have been assessed for tribute at any date in the history of the Confederacy, is a contribution of quite outstanding value to the study not only of the geography of the Athenian empire, but of any aspect of the classical history or geography of the regions which it embraced.

We are promised, and will eagerly await, a full historical commentary on these documents, in a second volume. Meanwhile we may unhesitatingly acknowledge that the material contained in the first, and the manner of its presentation, make it by itself a contribution of inestimable value for the study of the most interesting and instructive period in the history of Athens. When the authors say (p. xi) 'This book makes no pretense (sic) to being a final publication' they are only reminding us that scientific investigation knows no finality, for it is safe to affirm that any future discoveries in this field will not seriously modify the conclusions which they have already reached, and that they have erected, by their industry and acumen, a framework into which such discoveries will fit accurately and convincingly.

A word of recognition is emphatically due to the printers and publishers of this stately volume, and a tribute of gratitude is surely to be paid to the enlightened patrons of classical research in the United States, whose generosity, fittingly acknowledged in the introduction, has enabled Meritt and his fellow-workers to carry out the prolonged investigations which are so splendidly presented in its pages. And this brings us to express, in conclusion, the earnest wish that it may somehow prove possible to reprint this and its companion volume in a less splendid form, and thus put the work within the reach of scholars—old and young alike—who simply cannot afford to purchase it at the present price.

A. M. WOODWARD.

RACE, A STUDY IN MODERN SUPERSTITION. By JACQUES BARZUN.
Methuen, 1938. pp. 353. 10s 6d.

Mr Barzun's very timely book on the subject of race, having created considerable stir in America, now appears in its English edition. In it Mr Barzun first defines his problem, which is to determine what is meant by the word *race*, as historically and currently used. Then he traces the thread of social and political thought on the subject of race from the Greeks to Gobineau, and from

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Gobineau to Hitler. Finally he draws his own conclusions as to whether or not races exist, and explains why this subject has given rise to so many absurdities and so much confusion.

In reference to the existence or non-existence of races, a few quotations will serve to define the author's position. 'If sense and logic can lead to any truth, not a single system of race classification can be true' (p. 11). 'It may sound as if this . . . were a denial of the obvious fact that people who belong to the same family, nation, climate, class, or "race" have a tendency to think alike, even to look alike. No such denial is asserted or implied anywhere in this book. What is asserted and implied is that *these tendencies to think and look alike, if they exist, must be proved*' (p. 22). 'Even granting, for the sake of argument, the existence of racial differences in physique. . . .' (p. 130). 'Whether any one race theory be true or not, the fact that there exists no consensus of opinion about race terminology, its application, or its proofs, at once puts race thinking outside the pale of logical and scientific verification' (p. 278).

In other words, races may exist, but Mr Barzun refuses to take cognizance of them until the science of physical anthropology has been advanced to the point of completion. Physical anthropologists, besides disagreeing so widely as to render their results useless, are for the most part dishonest as well. '*Duplicity of Motives* . . . race theories are motivated by irrelevant interests and not by curiosity, which in turn explains the slovenliness, inaccuracy, and illogicalness of *virtually* every system' (p. 281).

There are two possible explanations for Mr Barzun's intolerance which will occur to any reader who, like the unfortunate reviewer, happens to pursue that stigmatized profession of physical anthropology. One is that under the term 'race' Mr Barzun has confused the concept of physical taxonomy with that of mental differentiation. He admits no difference between legitimate classifiers like Deniker and Lebzelter, and race propagandists like Günther and Stoddard. The second is that Mr Barzun's knowledge of physical anthropology is quite superficial. He seems not to realize the existence of many scientists who are just as 'open-minded' on the subject of mental differences between races as he, and who at the same time continue to pursue the dull but honest trade, which he openly ridicules, of skull measuring. Only a few, however, will probably understand these deficiencies and errors. The uncritical non-professional reader may feel with comfort that Mr Barzun has laid low the chimera of race, and those who do not read him at all, but merely hear him paraphrased, can be sure of it.

The historical section of the book, which is actually the major part of it, is the place where the author's scholarship, wit, and ability to write lucid English are for the most part happily combined. He shows an admitted partiality for

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French science and philosophy, and for French literature, in which fields he seems to be widely versed. But here again his passion for flippant iconoclasm at times overcomes him. ' . . . the Celts are always with us, even though they may never have existed. They were largely invented in the middle of the eighteenth century . . . ' (p. 150). A wit which depends for its effect on the exaggeration, distortion, or contradiction of fact has its place in literature, but not in a book intended to vitiate and destroy whole fields of learning.

Aware that prejudice, racial or otherwise, is an essential part of most social fabrics, the author traces the particular thread of what he calls ' racial ' theory which led to its historical culmination in the present-day absurdities of the Third Reich. Furthermore he shows reasons why such systems of discrimination have arisen in France, Germany, and elsewhere. ' Those human beings who have not lost their pigmentation are simply more clearly marked than others for discrimination ; they wear a uniform that they cannot take off, but they are not alone in their plight. Others have eyes, noses, or brogues to distinguish them in a rough and ready way and make them bear all the faults or all the virtues supposedly inherent in the group to which they are said to belong. Those faults and those virtues are themselves social in origin ' (p. 276). ' The truth of the matter is that in the modern world, real or supposed feuds apparently cannot be carried on in their own terms. Race happens to be the most popular form of gloss for simple hatred ' (p. 256). ' Race in Germany was a means to give back to the German people a feeling of self respect after the national humiliation of Versailles and since ' (pp. 250-251).

As the above quotations indicate, Mr Barzun has thought and written clearly and well on the subject of race prejudice, if not on race. He has competently exposed the logical fallacies of racial propagandists. This, and his historical survey of literate race prejudice in Europe and America, are the high points of his book, and as such it deserves unqualified praise. But he has not disproved, or even shown it unlikely, that races exist, as he attempts to do in his last chapter, while his flippancy and his counter-prejudices have left an otherwise excellent work marred.

CARLETON S. COON.

LEYIT KIN : a small House Ruin, Chaco Canyon, New Mexico. Excavation report by BERTHA P. DUTTON. *University of New Mexico Press, Santa Fe*, 1938. pp. 101 and 21 plates. 2 dollars.

The report is quite careful and clear, and the excavation work seems to have been carried out very carefully. Leyit Kin is a small ruin in the Chaco Canyon, in the northwestern part of the State of New Mexico. It was first excavated in 1934, and again in 1936 by the author with the help of W.P.A. workmen. Seventeen rooms and four *Kivas* or ceremonial-chambers have

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been found, and more are to be cleared. A great deal of pottery and other elements of material culture have been discovered.

In its present state of progress, the work of Leyit Kin affords an interesting contribution to the stratigraphy of cultures in the Pueblo area. It appears that the first culture-unit which underlies the others may be dated *c.* A.D. 800-950. The place was abandoned and new rooms and *Kivas* were built probably in the eleventh century. The last remains point to a 'Pueblo III' cultural type.

JACQUES SOUSTELLE.

PICTURE-WRITING OF TEXAS INDIANS. By A. T. JACKSON. *University of Texas Publication*, 3809, 1938. pp. xxvi, 490, with 49 maps, 324 plates. Distributed free by the Univ. of Texas, Austin, Texas, U.S.A.

This valuable study deals with the pictographs which are to be seen in many rock-shelters and other sites of Texas. The author has classified them most carefully and gives a detailed account of all the sites recorded, not without complaints about the vandalism of many tourists or idle travellers, who often seriously damage these important remains of primitive American art.

From the evidence so far gathered, it seems that the practice of making pictures on rocks originated about A.D. 400, and that it persisted well into historic times. The majority of the pictures do not seem to be older than 500 years. Many show an influence of the Spanish missions. Horses, cattle, and other imported elements are eventually met with.

As to the meaning of the pictures, there is so little to say that the very term 'picture-writing' may not be considered quite appropriate. The author states that 'all picture-writings were not idle scrawls, but there is no key by which all may be deciphered'. Some of them (sun-symbols, masked figures, etc.) probably had a religious significance, while others were meant to serve as charms, or represented clan or individual totems. Comparison with pottery designs and with pictographs on hides made during the historic period will possibly lead to a better understanding of the rock-drawings.

Mr Jackson's book is illustrated with many good plates and with distribution-maps which may prove very useful for further study.

JACQUES SOUSTELLE.

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Editorial Notes

THE word 'propaganda' is in bad odour today because methods of propaganda have been adopted that are not only indefensible in themselves but also ineffective for the achievement of the desired results. Scientific facts have been perverted for purely political purposes. With such crude and dishonest efforts archaeology can have no dealings.



But there are other methods that can produce results of the utmost value. Essentially such methods consist of supplying a demand, of giving the 'victim' something he wants rather than of trying to force on him something he doesn't. Applied to archaeology the first of these two methods may be explained as follows, where two countries, A and B, are concerned. A is a country whose archaeologists have organized an expedition to conduct excavations in B. Formerly such expeditions were little better than looting-raids on behalf of museums and collectors. They robbed tombs, took only the showy stuff, kept no records and published no report. Nowadays the keynote is co-operation with the people of the 'invaded' country. Now that the goodwill of Near Eastern countries is desired for political reasons, there is an opportunity to obtain it by these cooperative undertakings, which can ultimately achieve far more than the old-fashioned and rather short-sighted methods formerly adopted. We have in the British Council an organization which can employ this powerful weapon, and it is good news that use may be made of it. We take the opportunity of calling the attention of the British Council to the further possibilities latent in archaeological work conducted on these lines.

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It should, however, be recognized that archaeology is now no longer merely a hobby but a branch of science with techniques of its own, and that the pursuit of archaeology requires study and training ; it has become a skilled profession. (There is of course plenty of room still for the amateur ; but he would be the first to admit that he now looks to the professional for guidance, and cannot profitably work alone). Chief of these techniques is excavation. These facts, generally recognized in other countries—in Scandinavia and America for instance—are still ignored in some influential quarters in our own country. That is unfortunate, for archaeology can be used to create good relations between us and the peoples of other countries.



We are not indulging in a merely theoretical discussion. It would be possible to be much more explicit, but that might defeat our object. Out of many possible instances let us take that of a certain country in the Near East which was anxious to explore its own past by modern methods. The national institute invited the authorities of another and more advanced country to send them trained archaeologists who would carry out the excavation of an important ancient site. Expenses were shared and the work was successfully carried out. Good relations were thus established, and not only between the archaeologists concerned ; for the organization necessary for such an undertaking involves contacts of many kinds, not least of all because the actual digging is usually done in some rather inaccessible spot where the closest contacts with farmers, peasants and others are inevitable.



But such an expedition always has indirect results as well. The students of the 'invaded' country go to the institute or university of the other to take courses of instruction ; they learn the language and get to know the people and their ways. On their return home they spread that knowledge ; and for the rest of their lives they look to that country as their ' spiritual home '. Some of them rise to high positions, in one case (which we have had in mind throughout) one of those former archaeological students is now Prime Minister. At a time when his goodwill is courted by rival countries it is natural that it should be inclined to the one which helped and encouraged him in his earlier days.

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There is every reason for our own country to adopt a similar policy and for it to have equally favourable results. Our people are always welcomed in other countries when they go there on a holiday or for purposes of archaeological study. The desire for collaboration is present on both sides, but the Englishman too often fails to obtain the necessary support at home. It is difficult and embarrassing to have to explain this official indifference, caused by the rather narrow and old-fashioned view of culture hitherto held here.



This is not the place to go into details or to suggest actual programmes ; but such could easily be composed. Several are indeed present to mind in the writing of these Notes. One warning note, however, must be sounded ; the policy here outlined is a long range policy. It will produce certain immediate results, but that is not its main purpose. It is a policy designed to forge cultural links that will withstand a long strain. It produces a mental attitude that may be decisive at critical moments. It creates an economic goodwill (in the business sense) that has far-reaching practical results. And why does it do this ? Because its agents, the archaeologists and their associates are not mere propagandists with a specious and suspect mission ; they are simply scientists or technicians carrying out a task. They are supplying a demand, giving not taking ; and they are in no way compromising their integrity by this procedure. They are helping to develop the national culture, not trying to force a foreign one upon their hosts. Foundations of goodwill thus laid will in time support a lasting building ; the other policy produces only shoddy structures of an ephemeral kind.



But it must be realized that such a policy demands full recognition of archaeology in the 'exporting' country. It is not possible to export if you do not create factories and train experts to make the goods. It is not possible to send out archaeologists to excavate if you do not encourage them at home. Pupils from other countries cannot be trained here if the necessary organization does not exist. We do our best upon the existing voluntary basis, but we are hampered and frustrated. Our case is excellent, but that is not enough ; we must convince the jury. We must explain our work to the public ; when we excavate we must invite people to come and visit the excavations and explain to

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them what we are trying to do in language they can understand. We must answer their questions, not tell them about types of pottery. ANTIQUITY has tried for years to do this, not without success. But whatever else may be uncertain it is clear that in the years to come archaeology will have to depend more, not less, upon state support, for voluntary sources will be more restricted. The actual amount required is infinitesimal, but it can produce practical as well as purely scientific results.



Quite apart from the particular case in point, it is incumbent upon us archaeologists to make contact with the general public, and by this is meant every one who is not a professional archaeologist. We must not expect government help unless we are backed by public opinion ; and we shall not retain this backing (which we have already to a large extent) unless we make an effort ourselves. There are hundreds of people in this country willing to help us if we will only make it easy or possible for them to do so. Many of us do try and some succeed. But not all. One of our readers, writing to congratulate us on the special Sutton Hoo number, which he describes as the most satisfactory account he has ever read of an archaeological subject, continues : 'I do not know why it is, but most archaeologists write as if they thoroughly despise all the rest of mankind ; they might as well write in a dead language ! One doubts whether they all understand each other ; perhaps they possess a glossary, kept secret in manuscript '.



Perhaps our correspondent does not make due allowance for the necessity of technical terms in any special subject ; after all the columns devoted to sport, finance and motoring in the press are not always intelligible to the layman. But it is still true that archaeological articles are often written in a style that even experts find difficult to follow. Some of this obscurity would be clarified if the writer had always present in his mind the necessity of being understood by an intelligent non-archaeological reader. And today the necessity to do so is great. For in the future professional archaeologists will depend more and more for their support upon the intelligent members of the public, including those who control government funds ; and mere common sense indicates the path to be followed.

New World Origins

by J. GRAHAME D. CLARK

THE dictum of Clark Wissler that 'New World culture is [thus] a kind of pyramid whose base is as broad as the two Americas and whose apex rests over Middle America' is one of those brilliant generalizations which at once sum up the conclusions already reached, and point the way to further progress.

From the vantage of today one may agree with A. V. Kidder (22, p. 145) that American archaeologists have been unduly neglectful of the broad base of their pyramid. Yet it would be churlish to blame them when the apex was so enticing, so rich, so bizarre and above all so enigmatic. Indeed, when men first descried the peaks of Maya, Mexican and Peruvian achievement, it seemed hard to connect them with the lowly foot-hills of cultural attainment familiar in the temperate latitudes of the western hemisphere. Until the underlying unity of civilization in the New World was recognized, its pyramidal structure could hardly be appreciated; in default of this it is easy to understand how archaeologists tended to neglect cultures, which, however interesting they may appear to us from the historical angle, must have appeared to them as intrinsically poor and dull. Then again it was only on the edges of the pyramid that the foundation layer was visible; elsewhere it was buried under a superstructure, massive in proportion to its attractiveness.

Theoretically, also, the conception of the homogeneity of American civilization implied acceptance of the autochthonous development of its higher manifestations, which had to be won in the teeth of the opposition of the main body of Old World anthropologists. It was in many ways unfortunate that the study of American prehistory came to life at a time when evolution was being displaced by diffusion as the magic key of anthropology. American scholars had to fight against a tide which bore their European rivals forward to a temporary but illusory triumph. Perhaps on balance it was a gain that they had to prove themselves and win through against the tendencies of the time. The modern view of evolution and diffusion, as two of a number of

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processes through the complex interaction of which cultures have developed, is one which we owe to American scholarship and teaching. It is a balanced view in comparison with which earlier teaching appears doctrinaire and lacking in reality.

As D. S. Davidson has put it (9, 276n.) the diffusionists who tried to account for New World achievements in terms of Old World spreads were only too prone to rely upon the distribution of culture traits which 'can be valued at zero for comparative purposes'. Thus 'the innate similarities . . . in all essential features', used by W. Schmidt (43) to link South American with Old World culture-spreads, were too generalized to prove historical connexions. The Heliolithic interpretation of the higher cultures of Middle America, advanced by G. Elliot Smith (45) and W. J. Perry (33), was frankly mystical. To those who required evidence of the trans-Pacific Odyssey of the Children of the Sun the proffered 'agreements' between Old and New World cultures were likewise either so general as to be valueless or, if specialized, were just illusory. Elliot Smith's elephants (46) could hardly have trampled more effectively on any remaining respect for the gospel preached by himself and his disciple.

Some people, especially those whose knowledge of New World archaeology was slight, found it difficult to credit the aborigines with the ability to raise their own civilization independently of Old World inspiration. To many such the message of Baron Erland Nordenskiöld, best known in this country through his Huxley Memorial Lecture on 'The American Indian as an Inventor' (30), proved convincing. Unlike some European theorizers, Nordenskiöld had spent many long and arduous years in the field of South American archaeology, and his conclusions carried with them outstanding authority. In addition to many technical inventions he attributed to the American Indian the achievement of domesticating the animal and plant life of his habitat so effectively, that during the four centuries since the Discovery the white man has failed to make a single contribution of importance. The native fauna gave poor scope, but from it he domesticated the llama, alpaca, guinea-pig and turkey. Of plants he domesticated hundreds, some of which, notably maize, potatoes, Jerusalem artichokes, beans, tomatoes and tobacco, were eagerly appropriated by the Old World. As E. D. Merrill, the Harvard botanist, has argued (28), no amount of agricultural knowledge cradled in an Old World environment would have availed the original immigrants, confronted by a strange and bewilderingly rich flora.

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The higher cultures of Yucatan and the highlands of Mexico and Peru are now generally regarded as substantially native growths. This does not, of course, exclude the possibility that Middle America profited by a few traits diffused by navigators from Polynesia. Indeed, one of the most conservative of American anthropologists, Roland B. Dixon (10, p. 353), has felt able to admit such instances without in any way altering his view on the wider issue.

The underlying homogeneity of New World cultures and their collective distinctiveness from Old World cultures has been stressed by many writers. It may be granted that geographical isolation must have tended to accentuate these characteristics, but they seem also to imply some community of origin among the cultures from Alaska to Cape Horn. This gives point to Nordenskiöld's words (31, p. 249): 'incomparably greater similarity exists between civilizations as far apart as those of the Calchaquis of Argentina, and the Pueblos of North America, than between the culture of any Indian tribe and that of any people in the whole of Oceania'.

Again, while at pains to emphasize the wide range of variation in the physical type of the American Indian, anthropologists agree that 'there cannot be the least doubt as to the general somatic homogeneity of the race and the place of its origin . . . [or] of the observed basic unity of this type, across Asia and down to Cape Horn' (Wissler, 50, p. 375).

Thus it can be concluded on both cultural and physical grounds that the origins of New World humanity admit of study on the broadest basis. Beneath and beyond the glittering edifice of Middle America we may envisage a foundation layer, the nature and construction of which is still obscure, though even now in process of definition.

Two main ways of approach are open, those of comparative ethnography and of prehistoric archaeology. Already we may arrive at the broad outlines of the structure along the former, but for details and for empirical proof of the sequence of building we shall have to rely upon the latter. In exploring the archaeological approach I am mindful that progress along it is essentially a task for the future; but while looking forward it is permissible to try and appraise something of what has already been achieved.

The possibility of deducing by purely ethnographic studies the characteristics of the basal layer of New World culture is implicit in the conception of American civilization espoused in the opening sentence

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of this article. By hypothesis the lower cultures marginal to those higher in the scale of achievement may be expected to preserve elements of the original spread. It is, however, not always easy to be sure how far the marginal cultures are in fact primitive, how far they have been subject to degeneration, and how far they have absorbed traits by diffusion from more advanced regions. Certain controls are, however, available. The New World can show two major zones of primitive culture, divided by a more highly developed belt (FIG. 1). As Norden-skiöld has shown (31, p. 254-5), it is possible to list a large number of traits common to the lower cultures north of Mexico and in the extreme south and southeast of South America (Tierra del Fuego, Patagonia, etc.), but absent from, or of sporadic occurrence in, the intervening higher cultures; skin tents, bone harpoon points, bark buckets and fire-making by iron pyrites and flint are cases in point. The existence of two widely separated provinces allows us to check one by the other and so to arrive at conclusions based on agreements between the two. Then, again, there is the excavation of stratified sites. So far as objects of material culture which commonly survive on ancient sites are concerned, the archaeological method is capable of controlling decisively both the loss and the acquisition of culture elements.

A number of distinguished American anthropologists have tried by means of comparative ethnography to reconstitute the nature of the immigrant New World culture. In the following summary I am omitting certain aspects of culture, not because others have been wrong to include them, but because within my self-imposed limits I think it better to concentrate on traits more frequently and more effectively amenable to archaeological control. With these reservations, Kroeber (24, fig. 35, p. 349) and Wissler (50, p. 316) agree upon the following characteristics :—

- an economy based on hunting and food-gathering, the dog alone being domesticated ;
- knowledge of basketry, cord-twisting and netting ;
- use of wooden, bark and skin vessels ;
- ability to flake (and according to Kroeber to grind and rub) stone ;
- use of clubs, harpoons, spears (or darts) and spear-throwers.

Among the leading features absent may be detailed :—

- a knowledge of agriculture and domestication of animals—other than the dog ;
- use of pottery, the wheel, the plough and the loom ;
- practice of metallurgy.

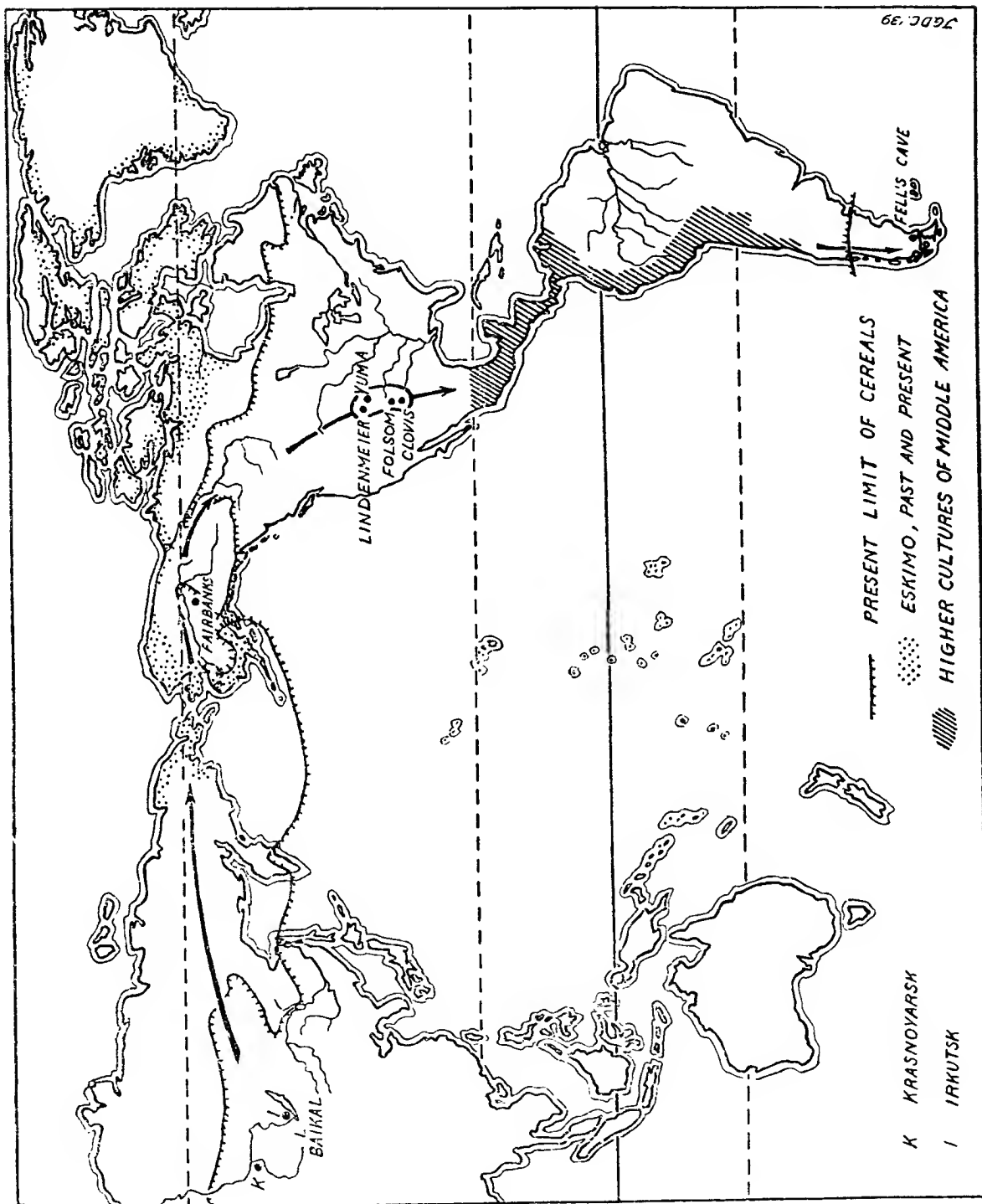


FIG. 1 (see p. 120)

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Before passing on to examine the findings of archaeology a word must be said about the status of the bow in the New World. Both our authorities list it as a basic trait, but Wissler, at a later stage in his book (50, p. 387) admits that it may have been a secondary accretion. There is some archaeological support for this. In the sequence of archaeological stages recently established by Junius Bird (3) in the Magellan Strait region of Chile, arrow-heads were confined to the upper levels, the points from the lower levels, to judge from their size and form, being exclusively spear- or dart-points or, in some cases perhaps, knife-blades. Again, in the south-western States of America it has been established, through the preservation of wooden components, that spears and spear-throwers (FIG. 3, nos. 1-3) were characteristic of Basket-Maker I and II, while bows and arrows came into use in Basket-Maker III and persisted during Pueblo I-V.

It is not uncommon for questions relating to the antiquity of man to cause strife ; but whereas in Europe it was the men of science who had to contend for ancient man against the high-priests of Christian dogma, in America these same have often been constrained to range themselves against the uncritical enthusiasm of ' discoverers ' only too keen to extend the range of human life in their continent. It would be unprofitable, as well as ungenerous, to recall some of the more extravagant claims which have from time to time issued from some of the recently settled parts of the United States, to retail some of the sterner strictures of savants from the eastern States, or to meditate ruefully on the occasional involving of certain of them in ' discoveries ' since allowed to lapse into a well-merited oblivion. Yet it is essential to approach the problem aware of the atmosphere and prepared to discount what A. V. Kidder (22, p. 143) has characterized as the ' craving for antiquity '.

Despite many previous finds it was the discovery made by Mr J. D. Figgins, Director of the Colorado Museum of Natural History at Denver, in an old river-bed some 15 miles west of Folsom, New Mexico, which opened a new chapter in American prehistory (Figgins, 11 ; Renaud, 37, p. 43-8). His claim to have discovered flint-points of distinctive type in association with the remains of extinct bison was amply confirmed by Dr Barnum Brown of the American Museum of Natural History, when in 1928 he uncovered the skeletons of no less than 23 bison and obtained a number of flints in position. The grouping of so large a number of beasts and the fact that their skeletons were intact, except for the tail bones, led Brown to conclude that the

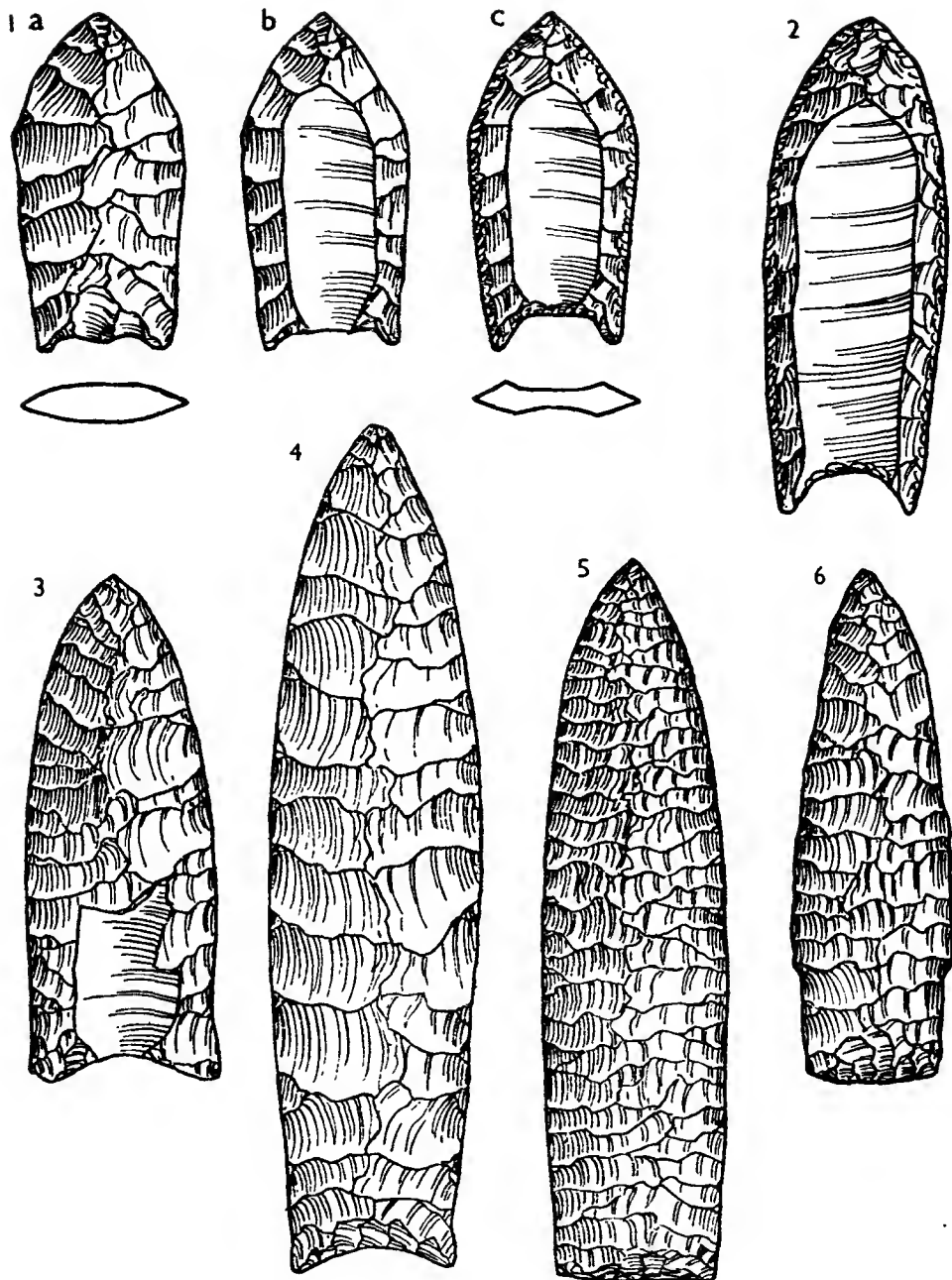


FIG. 2 (1)

No. 1 a-c, Squat variety of Folsom point at different stages of manufacture

No. 2, Leaf-shaped Folsom point

No. 3, Folsom-like point

Nos. 4-6, Varieties of Yuma point

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bison had been skinned and butchered as they lay. According to Bryan (6, p. 141) one flint-point was found 'imbedded in the clay between the rib bones', so betraying its use as the head of a projectile, almost certainly a spear or dart.

The Folsom point, now one of the leading fossils of American prehistory, is a thin blade shaped by pressure flaking on both faces. Its peculiar feature is a broad shallow groove or channel on each face, the negative scar of a flake struck from the base and extending two-thirds of the length, giving the point a characteristically bi-concave section. In plan the points may, as at the name-site, be squat with the greatest breadth well above the middle (FIG. 2, no. 1), or they may, as Frank H. H. Roberts has pointed out (41, p. 15-7), conform to an elongated leaf-shape (FIG. 2, no. 2). The treatment of the base also varies; sometimes it is hollowed out to form a regular curve (FIG. 2, no. 2), sometimes it is square (FIG. 2, no. 1c) and sometimes wavy. The hollow base is flanked by ears which vary considerably in length. The grooving or channelling of both faces is generally considered a device for facilitating the hafting of the point, presumably in a forked foreshaft. Points in which the grooving is poorly developed (FIG. 2, no. 3) are usually distinguished as Folsom-like points. These tend to be more variable in plan.

Knowledge of the Folsom culture has since been extended by Dr E. B. Howard's examination of a hearth with burnt bison bones and a domestic flint industry, including knives and scrapers (17, p. 95-7), and particularly by Roberts' investigation at Lindenmeier, 28 miles north of Fort Collins (41), Colorado. At the latter site we have a midden, which, accumulating round the margin of a pond or marsh, had incorporated quantities of discarded bones and domestic implements. Among the fragmentary and sometimes burnt bones each of the extinct bison found at Folsom was identified (*Stelabison occidentalis taylori* and *Bison oliverhayi*), as well as fox, wolf and rabbit. Of even greater interest was the stone industry, comprising scrapers on long and squat flakes, side-scrapers, knives, 'choppers' (one of them apparently a core tool), pieces of utilized sandstone, lumps of haematite striated from rubbing (body painting?), and some finely pointed flint implements probably used for engraving bone. Although described as 'gravers' these latter have, it must be emphasized, no connexion with the 'burins' of Upper Palaeolithic industries. The hafting of these small pointed tools, which are also known from the Basket-Maker culture (FIG. 3, no. 7; after Guernsey and Kidder, 14, pl. 35g), is shown by their occurrence in the houses and middens of the Old

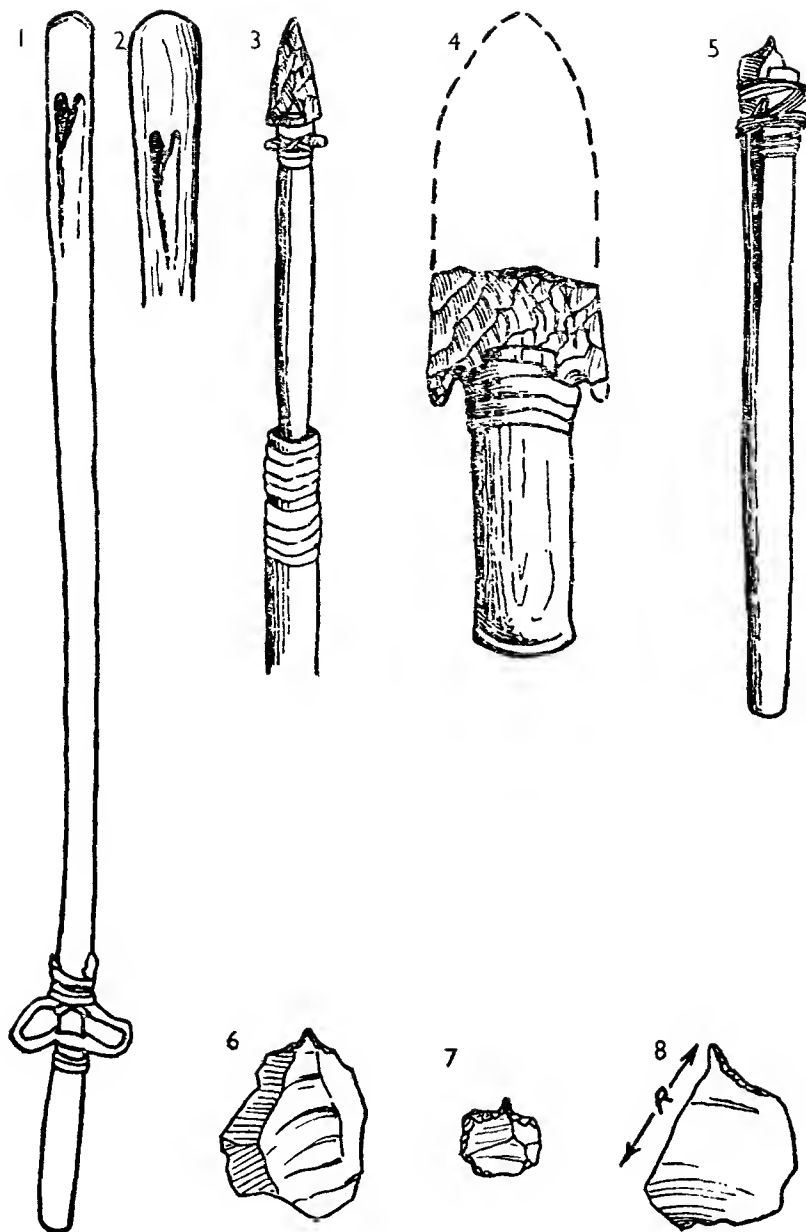


FIG. 3

- Nos. 1, 2, Basket-maker wooden spear-thrower and detail of another ($\frac{1}{2}$)
 No. 3, Basket-maker notched stone spear-head hafted in foreshaft ($\frac{1}{2}$)
 No. 4, Basket-maker knife blade set in handle. Note that notches point towards end of blade; in the case of spear-heads they are at right-angles ($\frac{1}{2}$)
 No. 5, Awl-like 'graver' in handle from St. Lawrence Island ($\frac{1}{2}$)
 No. 6, Awl-like 'graver' from Lindenmeier Folsom site ($\frac{1}{2}$)
 No. 7, Awl-like 'graver' from Basket-maker cave, Kayenta ($\frac{1}{2}$)
 No. 8, Awl-like 'graver' from St. Lawrence Island ($\frac{1}{2}$)

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Behring Sea culture excavated on St. Lawrence Island by Henry B. Collins, in some cases with wooden handle and baleen binding intact (FIG. 3, no. 5 ; after Collins, 8, pl. 41, 8 and pl. 56, 1). In their ancient Eskimo context the 'gravers' doubtless helped to execute the ivory engravings which lend such distinction to the culture discovered by Collins. Most unfortunately the organic component of the Folsom culture is yet unknown to us. Its recovery is one of the chief desiderata of American prehistory.

Evidently the Folsom people specialized in hunting the bison, using for the purpose some form of missile tipped by beautiful, if fragile, stone heads. Whether they used bows or spears must remain to some extent in doubt until their weapons are recovered under conditions which permit the survival of wood. Yet, while Roberts is no doubt correct when he says 'there is nothing definite to indicate whether the points were used in arrows or spears' (41, p. 21), the probability is that they were in fact hurled from such spear-throwers as have come down to us in certain desiccated Basket-Maker caves (FIG. 3, nos. 1, 2). Renaud (38, p. 65) has calculated the average length of the Folsom point at *c.* 45 mm, with a range from 17 mm to 75mm. Unless, which is unlikely, Folsom man used the same form of point for spear and arrow-head, it is the maximum measurement which is significant.

To judge from the distribution of the characteristic points the Folsom bison hunters ranged over that part of the High Plains comprised by *se* Wyoming, *sw* Nebraska, *sw* Kansas, East Colorado, and the western limits of Oklahoma and Texas. Within this region the sites are widespread, confirming the impression of nomadic existence. The absence of house-remains may be due to defective exploration, but more probably it implies the use of light structures such as would leave no tangible trace. The pursuit of bison must have yielded plenty of skin, while the abundance of scrapers on domestic sites suggests that use was made of the material so readily available. It is a fair inference that Folsom man lived in skin tents. In the absence of pottery it can be assumed that he used wooden, bark or skin vessels—most probably the latter. Whether he wielded wooden clubs, plaited baskets or twisted cord there is yet no means of telling. When more bones from midden deposits have been identified perhaps we shall know whether, like the Basket-Makers, he had domesticated the dog, a point of some interest in view of Wissler's doubts as to the status of the domesticated dog in New World culture (50, p. 387). Our knowledge of the Folsom

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culture is admittedly meagre ; it is significant that, in so far as the pattern is known, it conforms to that postulated by ethnographers for the basic culture-spread of the New World.

It would, however, be wrong to accept the Folsom industry without qualification as representing the earliest phase of this spread. One reason why the Folsom point has attracted so much attention is precisely that it is unique among the lithic industries of the world. It is further, as we have seen, somewhat narrowly restricted in geographical range. More widespread in the New World as a whole are Folsom-like points and a type named after Yuma, Colorado. Frequently showing pressure flaking of a high order, the Yuma point exists in three main varieties according to the treatment of its base, which may be concave (FIG. 2, no. 4), square (FIG. 2, no. 5) or slightly tanged (FIG. 2, no. 6). A good example of the first variety was obtained from the silt of a river-bed at Coldstream, near Fairbanks, Central Alaska, during gold-dredging operations in 1933 (Rainey, 36, p. 394 and fig. 9, no. 5). At the opposite extreme Bird has excavated what appears to be a Folsom-like point from his lowest level at Fell's Cave, near the Magellan Strait (3, p. 270 and fig. 27, bottom right corner).

On the principle that widely diffused traits are likely to be more ancient than narrowly distributed ones, it might be argued that the Yuma rather than the Folsom industry represents the early New World culture spread. Equally significant is the fact, pointed out by Renaud (38, 65), that a Folsom point in the course of manufacture passes through a stage when it is not to be distinguished from a Yuma point. At one time it was thought that the groove or channel which lends its special character to the Folsom point was formed at an early stage in its production, but systematic study of the workshop debris from Lindenmeier brought to light a number of the actual 'channel flakes' and proved beyond cavil that these were struck after the point had been completely flaked into shape (41). Successive stages in the production of a Folsom point of the stubby variety are illustrated by FIG. 2, nos. 1 a-c, from which it will be seen that the peculiarities of the Folsom point are secondary. The facts of geographical distribution and of technology thus combine to suggest that the Folsom industry is specialized and represents a side branch from the main stem. The Yuma point, on the other hand, may well prove to represent the immigrant culture in its primitive, unspecialized form. But it would be unwise to dismiss the possibility that further research will bring to light earlier industries which may have escaped detection partly on account of their very antiquity.

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The age of the Yuma and Folsom points is still undetermined. Some have argued for their high antiquity on the score of their association with extinct animals. The association of Folsom artifacts with at least two varieties of extinct bison has been proved at many sites. Associations with mammoth remains have been claimed for sites at Clovis, New Mexico (17, p. 95), and Dent, Colorado (42, p. 160). Harrington (15) has recorded human remains and artifacts with bones of the ground sloth in the Gypsum Cave, Nevada, while Bird's earliest levels in southern Chile have given the same association (3, p. 270). However, as Edwin H. Colbert has put it (7, p. 184), the crucial question to be asked when interpreting such a find is: 'Was this association within the Pleistocene period, or did it take place in post-Pleistocene times?' In point of fact there is no agreement among palaeontologists when the various animals concerned died out in the New World; but few would care to contradict Colbert's conclusion 'that many Pleistocene mammals in North America, such as the horse, camel, sloth and mammoth, persisted until a few thousand years ago'.

Some advance towards the solution of our problem might be made if the causes of the extinction of these creatures could be determined, but this unfortunately is far from the case. It is, however, worth remarking that while some animals are able to adapt themselves to surprisingly big changes in their natural environment they are sometimes very susceptible to human activities. The influence of the games at Rome on the pluvial fauna of North Africa, described by E. W. Bovill in *ANTIQUITY* (1929, 417), is here particularly relevant. The extinction of the wild bison on the High Plains of North America, where the advance of the railroad was preceded by a wave of unparalleled slaughter, is a yet more drastic instance. Within a space of fifteen years the 'herds of enormous, of incredible magnitude; herds so large that they covered the waving grass land for hundreds of square leagues', which in Theodore Roosevelt's words 'occupied days and days in passing a given point' when on the march, were reduced to about 500 head. The suggestion that the disappearance of a Pleistocene relict fauna might be attributed directly or indirectly to the activities of man was first made by G. Grant MacCurdy. Twenty years later it found echoes at the Philadelphia Symposium on Early Man, when Barbour and Schultz (2, p. 209) admitted its possibility and E. H. Sellars (44, p. 209) stated his 'hearty accord with the view that the Indian hunter had much to do with the extinction of some of the large mammals'. Whatever the future holds, it is abundantly evident that in the existing

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state of knowledge the well-proven association of Folsom man with extinct bison proves little as to his antiquity, one way or the other.

Within certain limits geology is more helpful. At least it seems to set a term to human settlement in the New World. The first point to be emphasized is that no find of human remains or artifacts beneath deposits of a major glaciation has yet been established. Again, it is significant that, in a continent of which the existing and recent coast-line is strewn with ancient middens, such are conspicuously absent from raised beaches of inter-glacial age (Johnston 20, p. 41). Negative evidence is proverbially dangerous, but it is in this case impressive enough to convince Antevs (1, p. 305) and other leading geologists that man reached America at some date after the climax of the last glaciation. At their maximum extent the Pleistocene ice-sheets covered the whole of North America, roughly speaking north of a line between Seattle and New York, with a broad lobe south of the Great Lakes, except for most of Alaska, parts of Yukon and certain Canadian islands north of Latitude 70° N. The precise limits of the last (Wisconsin) glaciation are still undecided, but it was certainly extensive enough to bar access to central North America until its retreat was already well under way. The route opened from central Alaska to the Great Plains by the melting of the Wisconsin ice-sheet led 'eastward to the Mackenzie and thence southward along this river and the eastern foot of the Rockies' (1, p. 306). On a geochronological basis the same authority estimates that man could have passed along this route between 15,000 and 20,000 years ago. It must be confessed that these figures have tended to exercise a mesmeric effect; too often they have been applied without a shred of worthwhile evidence to the actual arrival of man or even to specific American cultures. In real life what is actual rarely approximates to what is possible.

If geology can fix a lower limit, archaeology can go some way to supplying an upper one. Much of the territory in which the Folsom point occurs was occupied by the Basket-Makers and later by the Pueblo peoples. The former, when they first come into view, were on much the same level as the Folsom folk, living as food-gathering nomads, ignorant of pottery and using the spear and spear-thrower for hunting. The shape of the Basket-Maker spear-head, however, is quite distinct from a Folsom or Yuma point, being roughly triangular with side notches to catch the binding (FIG. 3, no. 3). It is generally agreed that the Folsom culture must have preceded the Basket-Maker. Stratigraphical evidence is as yet meagre, but a Folsom-like point was

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found by Howard in company with horse, camel, antelope, bear, bison, caribou and musk-ox, some four feet below burials of 'a people probably related in some way to the Basket Makers' in Burnet Cave, New Mexico (18, p. 406). The absence of bones of extinct animals from the few Basket-Maker I sites so far investigated also points in the same direction (Barbour and Schultz, 2, p. 192). In terms of absolute chronology the sequence implies far less than it would have done a few years ago, when generous dates were allowed to the early Basket-Maker stages. The application to the timbers of ancient structures of A. E. Douglass' tree-ring chronology has reduced the date of Pueblo I to A.D. 700-900. Since Basket-Maker III overlapped Pueblo I fairly completely, Martin Brown's estimate of mid-fourth to late-ninth centuries A.D. for the total Basket-Maker range appears eminently reasonable (5, p. 422).

The higher cultures of Middle America offer a further clue, since the food-gatherers must have passed through the region prior to their development. The Maya erected monuments dated according to their own calendar at an early stage in their history. Unfortunately, however, there is no agreed correlation with Christian chronology, authoritative estimates for the earliest 'dated' monuments ranging from A.D. 50 to 550 (Kidder 22, p. 149). It is in any case certain that the calendar must have taken generations to perfect. Wissler (50, p. 321) puts the inception of the Copilco-Zacateno stage in Mexico back to 200 B.C.; but, according to Kidder (22, p. 146), Kroeber and Vaillant decline to believe that the earliest remains yet discovered in Mexico or Peru are older than the time of Christ. The origins of the Mexican, Maya and Peruvian civilizations remain obscure, but it seems reasonable to allow several centuries for the economic revolution which made them possible. In Kidder's (22, p. 150) opinion 1000 B.C. is an irreducible minimum for the origin of American agriculture and settled life. If this is accepted our food-gatherers cannot have arrived in Middle America later than the second millennium B.C. The development of higher cultures in this region first divided into two the spread of food-gatherers in the Americas; it may even be that their southward drift to Cape Horn was impelled by pressure from the expanding Inca Empire.

If the earliest Eskimo spread could be dated, this might give us another upper limit; but, while by his discovery of the Old Bering Sea culture Collins (8) has extended the vista of Eskimo antiquity beyond the horizon of the Thule culture described by Therkel Mathiassen (27), this aim is still far from being realized.

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We are thus left with several millennia to play with. The food-gatherers may have reached the Great Plains as long ago as *c.* 12,000 B.C.; on the other hand they need not have arrived much before 1000 B.C. Until the study of climatic animal and plant history since the last ice-age is very much more advanced in America, it seems unlikely that we can expect much more precision. Meanwhile, if archaeologists could find us traces of the early nomads stratified below remains of settled peoples in Middle America, we should have something more to go upon.

Space forbids detailed consideration of the bearing of physical anthropology upon the problems of New World origins; but two facts must be stressed if we are to view the archaeological evidence in its true perspective. First, as Hrdlička has frequently insisted (*e.g.* 19), no human skeletal material has been recovered from the New World which does not fall within the range of recent types in America. Secondly, the affinities of the American Indian, despite the wide diversity noted by Hooton (16), are categorically Mongoloid (Boas, 4; Wissler, 50, p. 369-70). On the existing evidence the verdict of physical anthropology is that man came to the New World from northern Asia in geologically recent times.

Whether the earliest Americans passed from northern Asia by a land-bridge or whether they had to cross the Bering Strait by boat, depends upon the date of their arrival. If the vanguard reached the ice-free portions of Alaska at the height of the last glaciation, for which there is no evidence, but is not by any means impossible (Smith, 47, p. 91), they may very well have come by dry land; a 20-fathom lowering of sea-level would be sufficient to create a broad land-bridge. If on the other hand, as seems more likely, they did not come until the Pleistocene ice-sheets had already melted considerably and brought about a eustatic recovery of sea-level, then they must have come by boat. Today the distance between East Cape and the Seward Peninsula is only 56 miles; and thanks to three small islands there is no stretch of open water exceeding 25 miles. An observer standing on high ground near Cape Prince of Wales can see miles of Asiatic coast in clear weather. The powers of navigation displayed by the Canoe Indians of Tierra del Fuego (Lothrop, 25, p. 143-8) should warn us against underestimating the seamanship of the first Americans.

Whatever the method of transit, the route followed by successive invasions of America, prior to the European Discovery, is itself of outstanding cultural interest. It lay across great tracts of country outside

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the limits of cereal cultivation (FIG. 1), much of it barren tundra. Thus the western entry into the New World acted as a filter through which only food-gatherers could pass. In this respect geographical circumstances strongly underline the conclusion of archaeological and ethnographical science as to the status of the earlier immigrants to the New World. In Old World parlance they were pre-Neolithic; they belonged, economically and socially, to the same world as Palaeolithic and Mesolithic man in Europe.

It has been urged by Professor E. B. Renaud (38, p. 60-6), whose indefatigable championship of the antiquity of man in the New World is well known, that the close resemblance between Yuma points and certain forms of the Solutrean of France and Spain is proof of their palaeolithic antiquity. But to this there are grave objections. To be valid the comparison should take account of the industries rather than of selected forms. Here we must face the fact that we have as yet no adequate idea of the lithic aspect of the Yuma industry, let alone of its bone and other organic components. Nevertheless, thanks mainly to Roberts' work on the Lindenmeier site, we are better informed about the stone industry associated with Folsom points. Examination fails to reveal any specifically Upper Palaeolithic forms. The burin, as understood by Old World archaeologists, is conspicuously absent. Indeed, so far as the present writer is aware, no single specimen has ever been found in the New World. This outweighs by far any formal resemblances which may exist between Yuma and certain Solutrean points. Further, if instead of seeking parallels in remote regions we turn our attention to one already marked out by physical anthropology as supremely relevant to our problem, we shall find resemblances equally satisfactory in industries very much younger than the Solutrean.

Wissler (50, p. 385) has expressed the opinion that 'the solution of our New World problem lies as much in the heart of Asia as in Mexico or Peru'. Spinden (48) has gone further and recognized the peculiar importance of the Irkutsk and Krasnoyarsk regions of Siberia. But it is only too true, as Professor Tallgren has recently emphasized in his moving farewell to *Eurasia Septentrionalis Antiqua* (XII, 239-40), that despite an importance which 'cannot be overestimated', 'what we know at present, or think we know, of prehistoric cultures and their varying relic cultures in northern Eurasia is extremely little'.

The researches of Petri, and, later of Okladnikov, however, allow us to picture groups of food-gatherers living on the banks of the Angara

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river and the shore of lake Baikal, mainly by fishing and the collection of roots and wild grains. On most of the sites in the Irkutsk region, as well as on the Yenisei near Krasnoyarsk (Kartzov, 21), and indeed over a vast territory extending to the Dnieper, the Baltic and the Norwegian shores of the Atlantic, one finds a way of life basically Mesolithic with a material equipment infused to varying degrees with elements derived from cultures based on food-production, truly Neolithic—in some cases even Bronze Age—in character. Their cultural status may most accurately be described as 'modified Mesolithic'. As one might expect, their fishing gear, so intimately linked with their basic mode of subsistence, reflects most clearly their cultural origins, barbed fish-spears and harpoons (Petri, 35, fig. 24 and fig. 23) recalling those prevalent in Europe away back in Boreal time; from Ulan-khada (Okladnikov, 32, fig. 3, no. 9) and Raspútino (Petri, 34, fig. 22) we even have the slotted bone-point with both edges inset with flint flakes. Their pots had pointed bases and were decorated by the impression of mats, combs or twisted cord and frequently had pits disposed below the rim. They ground stone, in some regions making special use of slate, and sometimes polished flint. Their flint missile-points were flaked by pressure and provide some close parallels to the Yuma points (e.g. 32, fig. 5, no. 1; also Tallgren, *E.S.A.* II, fig. 46); but it is interesting to observe the absence of even that modest thinning of the base shown by the Folsom-like points and of that later American device, the side notch. Further it should be noted that the bulk of the Russian points were undoubtedly arrow-heads. Burials in the Baikal region show that the people were long-headed. It may prove significant that authorities are agreed that the earliest identified Americans were long-headed, though it is true we have yet no skeletal material certainly associated either with Yuma or Folsom industries.

Evidence from the lowest of the eleven successive occupations at the Ulan-khada site, neatly separated from one another by sand blown from the shore of the lake, suggests a pre-ceramic and pre-bow stage among the food-gathering groups of the Baikal region. Perhaps it was people at such a stage who spread, possibly under pressure from food-producing groups, to the New World. Although at present we know lamentably little about them, we may suppose them to have been truly Mesolithic in outlook—food-gatherers who may well have domesticated the dog (of Boreal antiquity in the Baltic region). Lacking pottery, they may have used receptacles of bark or basketry. The methods used by their immediate descendants to decorate their pottery

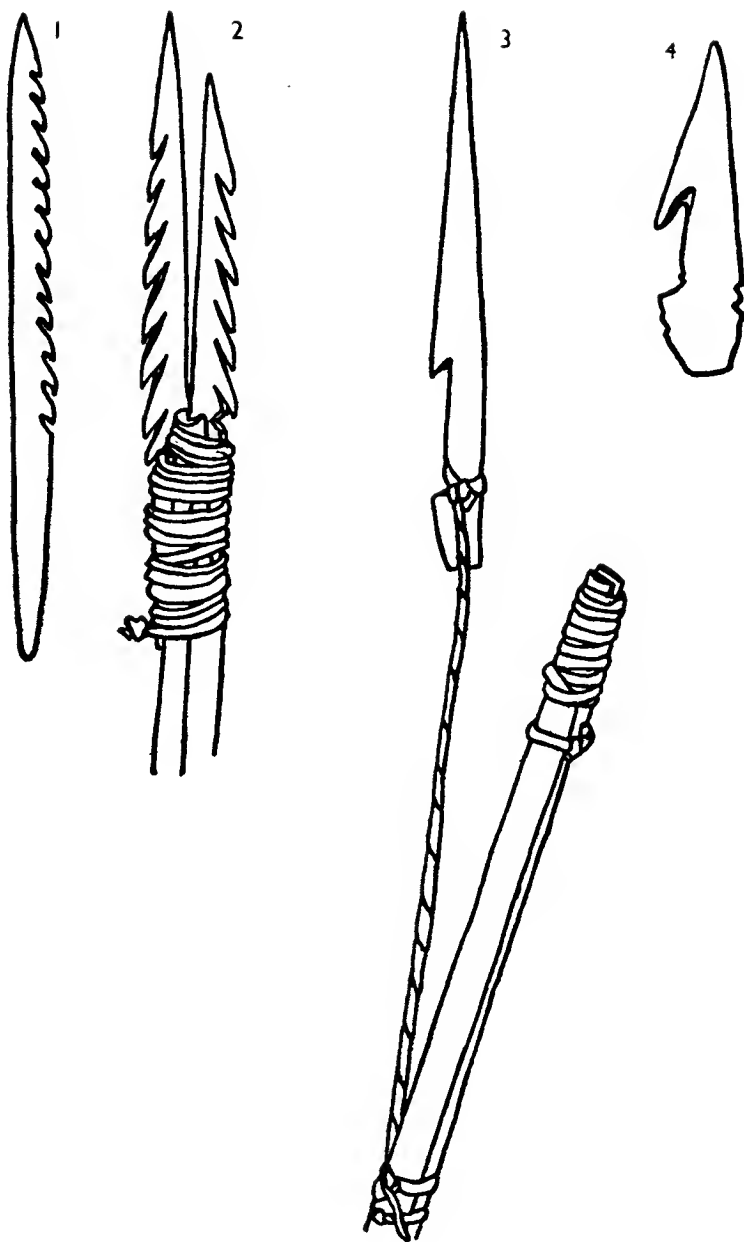


FIG. 4

- No. 1, Bone fish-spear prong from Kunda, Esthonia ($\frac{1}{2}$)
 No. 2, Fish-spear in use among the Yabgan Indians, Tierra del Fuego (points 10 $\frac{1}{2}$ ")
 No. 3, Harpoon used by the same people (length of head 10")
 No. 4, Bone harpoon head from dwelling-place at Vishy, Gotland ($\frac{1}{2}$)

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suggests that they knew how to plait mats and twist cord. It is almost certain that they used nets for fishing. They used fish-spears and harpoons, and most probably spears and spear-throwers.

With the possible exception of the pressure-flaked projectiles, which may have been derived from an ultimately Neolithic source, the proto-American culture in Siberia was, thus, essentially Mesolithic. Indeed, all spreads to America, prior to European arrivals from the East, were basically of this character, though some, like the Eskimo, as represented by the Old Bering Sea culture with its pottery, had been modified technically by certain borrowings from food-producing cultures. The hypothesis that the New World was peopled by migrants of Mesolithic status is one which explains many things. Parallels between items in the bone hunting and fishing gear of the Eskimo and of various Mesolithic peoples of Northern Eurasia have often been drawn. It is only as we compare (FIG. 4) the fishing spear and harpoon of the modern Yahgan Indians of Tierra del Fuego with those in use among the food-gatherers of northern Europe several thousand years ago, that we realize the full implications of Wissler's conception of New World civilization.

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To Petra from the West

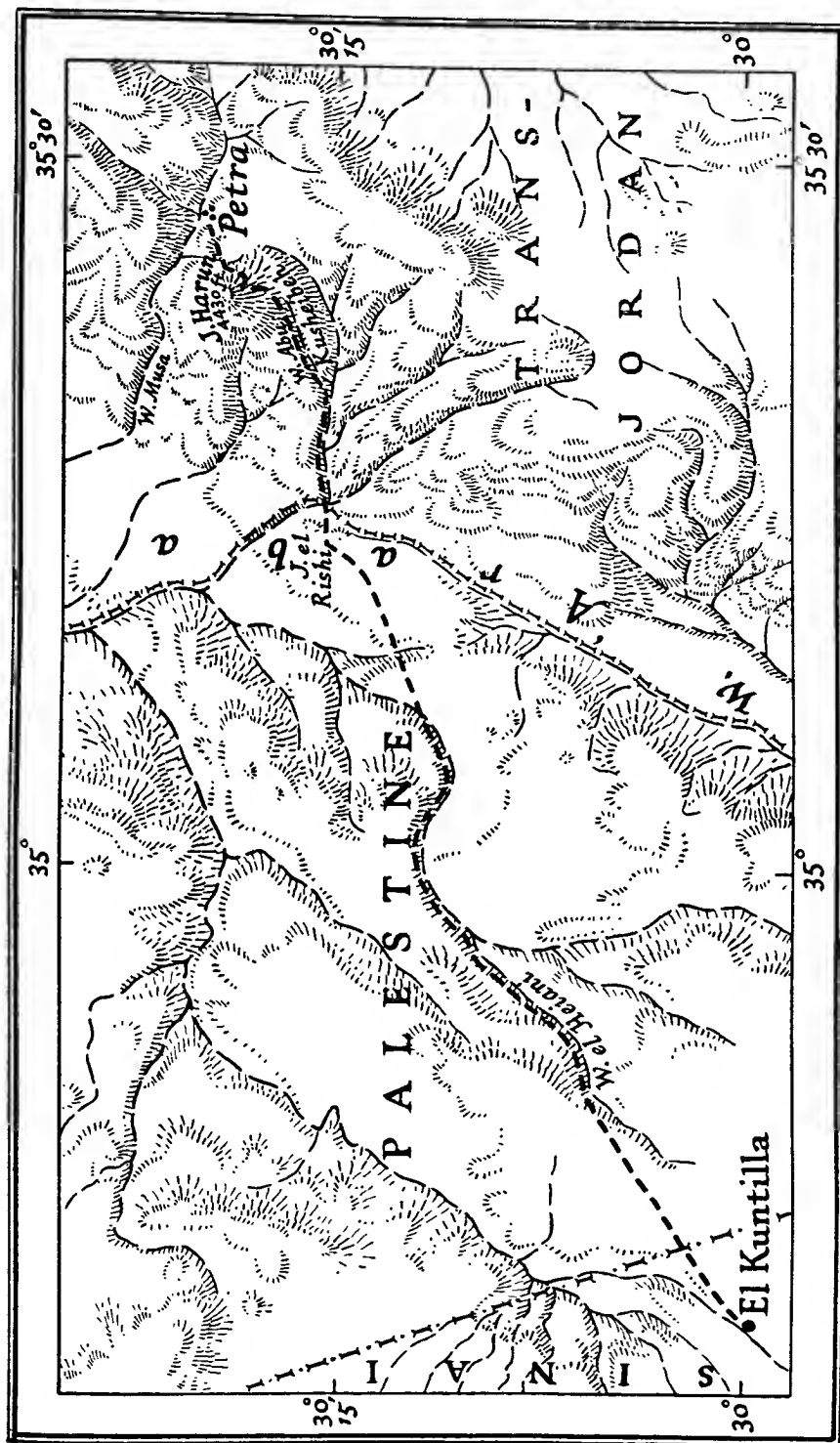
a forgotten Roman highway

by MAJOR C. S. JARVIS, formerly Governor of Sinai

THERE is considerable doubt in my mind whether this account of a journey to Petra should appear in a journal of ANTIQUITY's standard of integrity. The only reason why I have agreed to allow it to be published is that I hope it will arouse interest in this neglected part of the late Roman Empire, with the result that some responsible archaeologist will follow in our footsteps and also see to it that some photographs are taken from the air. This is particularly important, because in the general dun yellow of the desert sand with its outcrops of umber brown rocks, it is extremely difficult when one is on the ground level to decide if one is looking at natural formations or the general lay-out of some vast irrigation system. I realized this the first time I flew from El Arish on the coast to Kosseima, and saw that this stretch of seemingly bare desert I knew so well was dotted thickly with the remains of small stone farm-houses and orchards, and that there was a general scheme of irrigation in every *wadi* (dry water-course).

During my early service in Sinai I was interested in the Turkish plan of campaign against the Suez Canal because, having been on the other side from 1916 until 1918, I heard the usual alarming rumours of the railway the Turks were constructing across the desert and the roads they were making from Palestine to the Canal. A story that I desired to clear up was one from Arab sources that the Turkish Army had made a road that led down from the highlands of Trans-Jordan across the Dead Sea depression into Sinai. It was not the ordinary winding route down the Wadi Ithm that is used today, they said, but another, farther to the north, and with excellent going all the way.

The Beduin is not normally a truthful man, and one is prepared for mendacity of the first water when he is trying to cover up his misdeeds ; but it is difficult to understand why he should lie with precision and emphasis about something that is of no possible interest to him. I think it is possibly due to a desire to please and to give the reply one



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hopes for. If I asked about the road from some Arab of the locality who should have known about it, I received a glowing description of its excellence: 'Wallahi, yes, I know the road well and during the war have seen with my eyes lorries in great numbers and big cannon travelling along it'. Later on when I had proved definitely it did not exist the attitude was, 'Of course it did not exist—how could it'? though one old gentleman ingenuously explained the mystery away by saying that a recent fall of rock had blocked it in the narrowest part. I saw the fall of rock and estimated this had taken place some centuries before Moses started his wanderings.

There was some reason for thinking that the road might be there because it was quite obvious that the Nabataean city of Petra must have had an outlet to the west. As everybody knows, this forgotten city, carved from the natural rock, lies in a winding valley in the mountains of Edom west of Maan; from the east the only way into it is by means of a deep narrow gorge with precipitous sides called the Sik. There is no attempt here to write of the wonders of Petra as these have been dealt with very adequately by a variety of writers, from the florid and romantic to the dry-as-dust purveyor of bald facts. If the carvers of this city had foreseen that which was to be written about them in the twentieth century they would never have started the work; imagine having your eyes compared to 'passionate pools of ink' which is how one journalist described the appearance of the Nabataean masons!

The attempt to discover the road into Petra from the west was to be made by car, camel and pony. I was to supply the cars and the camels from those of the Egyptian Frontiers Administration, and Peake Pasha of Trans-Jordan was to find the ponies from the Arab Legion, as the expedition was to be an international one and both Egypt and Trans-Jordan were interested. At least we said they were, the argument being that if they were not interested they should have been. Officialdom sets its face very sternly against 'joy-riding' with Government vehicles and animals, and the suspicion that the explorers into the desert might possibly find some pleasure in an expedition into stark sterility is sufficient to cause those in authority to frown upon any enterprise. When Major Bagnold of the Royal Corps of Signals started his systematic exploration of the very harsh Libyan Desert he and his brother officers were regarded as 'joy-riders' of the most exuberant variety and no facilities whatsoever were granted them. If they had wished to hit the high spots in the casinos of southern France

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leave would have been granted them without question; but as they desired to find out what lay behind the Libyan sands they were regarded with suspicion and as officers who did not take their profession seriously. Today, however, the War Office congratulates itself upon the fact that, owing to its foresight, there are over twenty officers of the Royal Tank Regiment, Royal Corps of Signals and Royal Engineers who know every track in that desert of great strategical importance.

The first part of the journey to Petra was easy as we travelled down the frontier road in Sinai that runs from El Arish to Kuntilla, a camel corps post some fifty miles north of the Gulf of Akaba. Here we stayed the night, and that evening a discussion started as to whether we should proceed to Petra by the unknown road or by the more prosaic round about way by Akaba and Maan. It was pointed out amongst other things by the dissentients from the original plan that the cars would certainly get no further than the Wadi Arabah in the centre of the Dead Sea depression, and that the camels would not be able to surmount the pass on the other side. The result of this was that we started the following morning on the pre-arranged plan to attempt the seemingly impossible, but with the knowledge that a chorus of 'I told you so'! would be sung at the first signs of failure; and this creates an uneasy atmosphere.

Our cars in those days were the Morris six-wheelers with steel caterpillar tracks for sand going. Today they are completely out of date, but ten years ago they were the latest thing for desert travel. They were large and cumbersome vehicles, but had the advantage of being commodious enough to carry a considerable amount of kit, together with water and petrol. We struck out from Kuntilla due east, and were soon in the head waters of the Wadi el Heiani—a boulder-strewn gorge of gravel and coarse sand, sprinkled with tamarisk bushes and the various scrubs of the desert that provide the Dorcas gazelle and the camel with their food and the Beduin with his charcoal. It is a harsh desert, this waste of the Dead Sea depression, but luckily it was the dry season at the time of our journey as we travelled the whole way down the actual bed of this mountain torrent. One learns in desert travel that when one is in hilly and broken country the easiest way, and on many occasions the only way, is down or up some *wadi* where the force of water has swept a clean path of polished gravel and coarse sand.

After travelling some forty miles through this country we came to the bed of the Wadi Araba, the big watercourse that flows between the

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Dead Sea and the head of the Gulf of Akaba, but—and here is a point that most people overlook—it does not flow in the same direction. The upper portion flows northward into the Dead Sea, which is 1200 feet below sea level and the lower part, which we struck, flows southwards into the Gulf of Akaba. There is a divide in this depression which rises to the height of 600 feet above sea level, and the big scoop in the earth's surface is not as one supposes from the map a huge valley running all the way down to the Dead Sea.

The Wadi Araba where we struck it was a series of deep cuts in the reddish clay pans, which represent the washings of the mountain ranges and which are general for the greater part of the way. Ahead of us the desert rose rapidly in rugged foothills and mountains, and the skyline was serrated with the unbroken ridge of the Trans-Jordan mountains with Gebel Haroun (the Mount of Aaron) standing out conspicuously to the north. It is on this mountain that Aaron was buried, and there is a big white-washed tomb on the summit that is regarded by the local Beduin as a very holy place indeed, so much so that no Christian is allowed to ascend the mountain. Actually if one wished to do so one could climb it from the western side without any Arab in the vicinity being aware of the fact.

Here by the bed of the *wadi* under an isolated mountain in the valley called Gebel el Rishi we met our camel corps with a large number of baggage camels to carry our kit when we forsook the cars, and a mounted detachment of the Arab Legion on their tough little mountain ponies. Previously I had not considered the horse to be a mountain animal, but after seeing the Arab Legion scurrying up broken mountain sides and galloping along the edges of precipices I have felt inclined to put the pony, or at any rate the Trans-Jordan pony, in the same class as the ibex, the mouflon and the chamois.

The cars were doing well; we swayed, surged and ground our way over hard going and soft, over boulders and down the steep sides of small *wadis*, and we continued working eastwards until we entered the lower part of the Wadi el Khushiebeh which flows down to the depression from the town of Petra. We travelled up this for some miles with the banks growing steeper and higher until there was an unbroken wall of sheer rock on either side.

So far there was no trace whatsoever of the Turks' road and it was manifestly plain that they had not travelled this way for there was not a sign of a rut or a car track. It was then fourteen years since the Turks had waged war in Sinai, but a peculiarity of the desert is the

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length of time that car tracks will show on its surface. When I left the Sinai Province in 1936 I saw every time I travelled southwards the deep ruts I had made in 1922, when three days' constant soaking rain turned the whole Peninsula into a tapioca pudding, and I took a week to churn my way through the wet clay gravel from Nekhl to El Arish, a distance of 140 miles. Also on a wide clay-pan in the southern Libyan desert there are today the tracks made by an Army light car patrol in 1916. They travelled across the pan after one of the very infrequent rain storms and their tracks remain, not as ruts, but as embossed ridges raised on the level clay surface. The explanation of this is that the constant sand-laden wind of the desert scores away the surface of the clay to an appreciable extent every year, but where the car tyres had packed it and compressed it whilst damp it has resisted the action of wind-driven sand.

I have said that we saw no tracks of Turkish cars the whole way, but later on when we had reached country that was obviously impossible for cars and all wheeled traffic, and will remain so for ages to come, I saw imprinted in the sand the unmistakable pattern of a Dunlop cover. I had imagined I had seen something like this several times previously, but here it was picked out in all its detail in the sand and there was no doubt whatsoever about it. A short distance ahead I saw another track and was wondering how it was possible for a car to ascend these mountain gorges when the explanation suddenly dawned upon me. Some original Beduin had soled his sandal with a strip of Dunlop cover, finding the material most lasting and suitable for rocky paths, and it was his tracks that I was looking at. This was the first time I ever met the Dunlop sandal sole, but during the next few years it became very popular in Arabia and is now a recognized adjunct to the desert cobbler's outfit.

When the Wadi Abu Khushiebeh had narrowed to such an extent that the drivers were beginning to wonder if they could turn their cars round we came to the end of things so far as mechanized transport was concerned. Barring our way was a sheer wall of reddish limestone about fifty feet high and it was obvious that in the rainy season this constituted a waterfall of no inconsiderable size. Above the fall the *wadi* was a gorge of vast tumbled boulders so that even if we had found a way round the obstruction this convenient water-course had ceased to be of any further use to us.

The kit was unloaded from the cars, packed on to the baggage camels and, selecting either a pony or a camel for riding purposes

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according to taste, we started on the ascent. The track led up out of the *wadi* some hundred yards or so below the falls, and it was the usual narrow beaten path used by the camels and flocks of the Beduin. It was not until we reached the high ground where the *wadi* fell away in a sheer drop that we realized the track was something more than a Beduin camel path for here, commanding the narrow pass, was a block-house of cut stone—the first signs we had seen that this part of the Wadi Araba had any past beyond an unbroken occupation by the roaming nomad who leaves no mark of his existence except his winding tracks.

At the present time this southern and desert part of Palestine is a wilderness indeed ; but in the past, and not so far back in the past, it lay on the main route from the East. During the Roman occupation of Palestine after the first century A.D. trade flourished to such an extent in Palestine that Akaba, now a small insignificant fishing village at the head of the gulf, was the port at which merchandize from southern Arabia, India and Ceylon was landed. A part of this went up to Trans-Jordan and Syria by the Wadi Ithm to Maan, Amman, and eventually Damascus, but a considerable portion travelled by an at present undiscovered road northwards to the six deserted Roman towns of this area : Abda, Kurnub, Khalasa, Raheiba, Esbeita and Auja.

These towns, which are today quite unoccupied (with the exception of Auja) lie in the area south of a line drawn from Beersheba to Gaza, and it is obvious from their size that in each their inhabitants numbered roughly ten thousand. The district is now known as the Negev and the Jews think, as it had evidently a prosperous past and has definitely no present, being an empty quarter, that it might be used by them for settlement purposes. This suggestion has caused the pro-Arabs, a very vociferous and convincing body, to jump into the arena and prove that it never had a past, that there never was any prosperity or trade, that the towns were occupied by religious hermits and recluses only, and that it is not fit for settlement of any kind, so that the ordinary man does not know what to believe.

The fact remains that this trade with Palestine and the world farther west did come up the Wadi Araba ; that some went northwards to Hebron and Jerusalem, some to the coast at Gaza where it was shipped to Italy and Greece, and some went west into Egypt. It is therefore safe to assume that a well graded highway ran up the *wadi* and that a branch road led over the highlands into Petra, which in those days was densely populated and a place of some importance. I do not

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pretend to be an archaeologist ; but if the Romans built, or rather carved out of natural rock, an amphitheatre capable of seating over a thousand people, one must assume that the entertainment purveyors of those days saw some reasonable hopes of filling it when a particularly good scrap between exponents of the short sword and shield versus the net and trident was being staged.

For the following five hours we trudged stolidly upwards along a winding way that led over the mountains. The track was so steep in parts and the going so rough that we all dismounted and preferred to walk rather than trust to our animals to get over the difficult places and round the sharp corners. For myself the journey was something of a nightmare as I was responsible for the well-being of the party, and the whole of our rather weighty baggage—our personal kit, our supplies and our water—was being carried on baggage camels who, however excellent they might be on the plains of Sinai, were not trained to winding mountain paths and sheer declivities. Again and again I had to go back and supervise the unloading of some animal that refused to mount a dangerous part of the road, and for this reason I was so distraught that I have a very vague recollection of what I saw on the road. It was essentially a route that one should have followed at one's leisure to enable one to pick up the line of the old Roman track the whole way. Time being a factor, we followed the Beduin path which no doubt cut off corners or diverged to the right or left where wash-outs had occurred.

On two occasions before we reached the shoulder of Gebel Haroun I noticed the orderly line of kerb-stones marking the old made track, and there were three if not more ruined block-houses of cut stone. At the actual shoulder of Gebel Haroun where the road, after leading away up the precipitous mountain-side towards the northwest, turned sharply east again towards Petra, we came to an obstruction across the track that I should have liked to examine in detail.

Unfortunately at that moment we had a lot of trouble with the camels. Two had fallen with their loads, the remainder were jibbing at the 'one in two' ascent and it looked as if I should have to accept defeat and call off the attempt to make the pass with camel commissariat. I mention this as an excuse for not being absolutely certain about the existence of this obstruction, and it will be interesting to hear a description of it from travellers who have met it in easier and less confusing circumstances.

So far as I remember at this spot the Gebel Haroun rose precipitously to the north absolutely barring all progress in that direction,

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and to the south the land fell away in a sheer cliff to a gorge below. There remained a narrow neck on the shoulder of the mountain that was only some three hundred yards wide, and across this was built a solid wall of roughly-shaped stones. The wall was about ten feet high and the peculiarity about it was that it was not exactly a wall, but rather a solid barrage of shaped stone about a hundred yards in width. Through this in orderly zig-zags ran the road, and one could realize what a very efficient line of defence it constituted in the days of archers and troops armed with the sword and javelin.

This apparently constituted the last line of defence, for from this point onwards the road, having crossed the divide, ran by easy gradients towards Petra, which lay in a hollow to the east. We could not see the ruins themselves, but we recognized the peculiar billow-shaped pink hills which surround the Nabataean town and have caused it to be known the world over as 'the rose-red city half as old as time', perhaps the most hackneyed quotation in the English language.

After passing the barrage we began to see obvious signs of past civilization on all sides. The lower slopes of the mountains were terraced for cultivation as far as we could see, and this terracing appeared to be in an excellent state of preservation though it was not being used by the present-day Arabs. It is difficult to say if these terraces were cultivated with vines and olives or whether they were used for narrow strips of corn; they would presumably be suitable for either. Every small *wadi* we crossed had a broken dam across it and on all sides were small stone enclosures—either *kraals* for cattle or orchards for selected fruits.

Then began the well-known carved tombs, store-rooms and dwelling places which are peculiar to Petra. They started in quite a small way—an oblong doorway some ten feet high carved out of the smooth face of the rock and a small chamber inside, and the first specimens we met appeared to be unfinished. As we travelled onwards the doorways and chambers became larger and there was some decoration over the lintel, usually a rough Nabataean step-carving. Finally we came to a big isolated square block of stone standing in a *wadi* that was about the size of two haystacks, and this so far as one could see had been completely hollowed out for occupation.

After this Petra proper began and we moved slowly along through masses of fallen masonry with carved tombs on either side until there hove in sight the pillar of Artuf, which may or may not be phallic; in any case the present-day Beduin have no doubt whatsoever about it

TO PETRA FROM THE WEST

and its name in Arabic is unprintable. The pillar of Artuf looks down on Cook's tourist camp and our journey so far as exploration went had come to an end.

This I admit is an entirely unsatisfactory article about things of interest that were half-seen and also half-forgotten by a small party, none of whom, excepting possibly Peake Pasha, had any knowledge of archaeology. One thing we discovered was that the inhabited part of Petra extended very much farther to the west than is generally supposed, and there is little doubt that the Nabataeans had a road out to the west by the Wadi Abu Khushiebeh, which the Romans afterwards improved and straightened. There is also, so far as one can see, a third road that bifurcates from the one we took and runs out northwest via the Wadi Musa, but this I believe has already been explored. A third point, which may also be of interest to those who oppose Jewish occupation of the Negev so strenuously, is that we did not meet a living soul from the time we left Kuntilla until we were actually entering the outskirts of Petra itself. It is therefore difficult to believe the Arab contention that this area is already well populated by nomad Beduin. From the fauna and feather point of view our trip was equally featureless, for all we saw was one covey of Hayes' partridges in the Wadi Araba, a covey of chikor outside Petra and one solitary Dorcas gazelle, who stamped with irritation at the sight of our cars and regarded them with unspeakable contempt.

Hand-made Pottery in Jutland

by AXEL STEENBERG*

FOR modern Europeans the wheel is the most characteristic implement used in the making of pottery. The history of the potter's wheel, which has lately been described briefly and clearly by the German, Adolf Rieth,¹ evidently goes back several thousands of years. In southern Mesopotamia the potter's wheel can be traced continuously from at least the fifth millennium before Christ, and the Egyptians adopted the technique 3000 years before our era. It is characteristic that pottery-making with the help of the wheel is man's work, and that it nearly always seems to belong to an advancing urban culture with its associated specialization of labour. It stands, as a rule, for greater efficiency, and indicates, on the whole, artistic degeneration—at any rate in early times, until man has learnt to bring his implement to perfection. At the same time the old technique survived and took on hybrid forms with the new. A similar relation can be observed throughout the history of Danish pottery.

The potter's wheel reached Denmark at the close of the Iron Age, at the same time as the first urban settlements. Hybrid forms between the new and the old techniques can be seen best in the black wares. Vessels are found here, of which the body is formed by hand, while the neck is shaped on the wheel. With the introduction of glazing the hand-made wares sank to the level of coarse utensils, but at the same time small, black vessels of great beauty were made without the use of the wheel in country parts.

This rural industry has continued till the present time, even though it no longer has an economic function. It has been repeatedly and fully described in Danish,² and the writer has recently dealt with the subject in English in the periodical *Folk-Liv*.³ The purpose of the present brief description is therefore, first and foremost, to acquaint

* Translated by E. Cecil Curwen.

¹ Adolf Rieth, *Die Entwicklung der Töpferscheibe*, Leipzig, 1939.

² A. G. Jensen, *Jydepotten vort Lands ældste Haandværk*, Copenhagen, 1924 (principal reference); C. Nyrop, *Dansk Pottemageri*, Copenhagen, 1882; F. Sehested, *Jydepotteindustrien*, Copenhagen, 1881; Laurids Smith, 'Om de sorte jyske Lerkars Fabrikations Maade. . . .', *Iris*, Copenhagen, 1791.

³ Axel Steensberg, 'Primitive Black Pottery in Jutland', *Folk-Liv* (International Journal of European Ethnology and Folklore), 1939, 113-46.

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the numerous readers of *ANTIQUITY* with the fact that there exists in Jutland a pottery-technique which is a direct survival from ancient times.

The technical process in the production of the black Jutland pottery is, broadly speaking, as follows : the clay that is to be used for making the pots is dug during the autumn so that it can lie through the winter and be exposed to the frost. In this way a part, consisting of small, thick lumps of clay that are not workable, is separated and can be picked out from the mass of raw clay. The latter is wetted by sprinkling water on it the evening before it is to be worked, after which it is chopped about with a spade or fork. It is then made into little balls and taken into the room where it is to be worked and shaped. The working is done with the feet, but first micaceous sand is added in the proportion of three to one, or two to one. Also modern potters, who use the wheel and burn the clay red, add sand when they want to make a vessel for cooking purposes ; because otherwise the wall of the vessel will not stand the expansion caused by heating without breaking. The clay is worked three or four times, and at the same time all kinds of impurities are removed. Then it is cut into strips that are rolled together and worked again with the fists. Finally the clay is rolled up in the form of a conical lump.

When the shaping of the vessel is to begin, the woman who does it puts on a coarse sackcloth apron and sits on a chair with a wooden board on her lap and her left foot on a stool. She wets the board with water from a bucket by her left side. The broad end of the cone of clay is turned evenly on the board ; then the other end is turned downwards, and the thumb of the right hand is pressed down into the up-turned base of the cone, while with a little pressure here and there the clay is turned on the slippery board with the help of the palm of the left hand, until it assumes a circular form. The clay is forced out on top in the form of a roll, and the hand inside is pushed right down to the bottom, as is seen in FIG. 1.⁴ Now a cloth, consisting of canvas lined with woollen material, is wetted so as to act as a sponge, and is laid over the rim, which is shaped by turning the clay round and round (FIGS. 2, 3). After the body of the pot is pressed outwards somewhat (FIG. 4), the lugs are as a rule applied (FIG. 5). A lump of clay is laid

⁴ The illustrations in this article are in one respect different from those published in *Folk-Liv*, in that five of them were photographed by Dr W. Iversen of Vejrup. The rest were taken by the author while studying the only two surviving women potters, Maren Hansen of Vejrup, and Mathilde Nielsen of Sønder Elkær, near Billund.

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inside the vessel so as to close the aperture in the base, and the whole is smoothed by turning.

After the pot has been allowed to dry for a period varying from a few hours to one day, according to whether it takes place outside or inside the house, the lower part is wetted again and the woman takes hold of it in order to shape the body of the vessel. To do this the fore-finger-joint of the right hand is used as a kind of hammer inside the pot, while the palm of the left hand acts as a resistance on the outside. After rubbing over the inside with an elliptical smooth stone the feet are added, and the pot is dried indoors for a couple of days because the drying must take place absolutely evenly.

After this drying, as a result of which the pot has become firm and rigid in its walls, comes the more cleanly work of smoothing and polishing the surface. The scraping, which is done with a knife-blade, spoon and handles of different sizes and curvatures, removes small knots and fills up the holes after them. The vessel, which, like all the Jutland pottery, receives no special glazing, is meanwhile not impervious to liquids. Therefore the pores must as far as possible be closed, partly by a surface dressing of greasy clay or marl, and partly by smoking. If in spite of this the pots are not quite water-tight one can immediately attain complete impermeability by boiling them in skimmed milk—a method which has also been used in the Hebrides for making the so-called ‘craggans’ water-tight.⁵

The greasy clay or marl is wetted and smeared over the vessels during the final drying.⁶ When this slip has soaked well in and become dry it must be smoothed if a plain black surface is desired. This is done with a smooth, round flint, which only becomes really good after being used for about twenty years. Sometimes all the surfaces are treated: for example, the rim, and in the case of milk-vessels the whole of the inner surface, so that it may be quite smooth and easy to keep clean, in order that the milk may keep fresh better. Sometimes spiral ornaments are employed, or criss-cross, zigzag or wavy lines.

After further drying, during which the pots have been covered up to protect them from strong light and from rapid drying, they go into the smoke-kiln where the fine pores are closed with a tarry deposit. The smoke-kiln is, as FIG. 6 shows, an ‘earth-house’ without walls,

⁵ Arthur Mitchell, *The Past in the Present* (Edinburgh, 1880), p. 28. [See also ANTIQUITY, 1939, XII, 280-2.—E.C.C.].

⁶ Cf. Norwegian experiment in Johs. Bøe, *Jernalderens Keramik i Norge* (Bergen, 1931), p. 210.

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excavated in the ground like a cellar, the sides and top of the entrance being of brickwork. In addition, the building is most frequently constructed of inflammable materials, since the roof should preferably be porous without being leaky. Across the pit in the earth are laid loose poles on which the pots are stacked. If the kiln is wet, a fire is lighted in it a couple of days in advance, and while the pots are being put into the kiln the greatest care is taken that they should not be exposed to moisture or draught. The smoking should take place extremely slowly; therefore only a single piece of peat is kindled to begin with. The heather-surface of the peat is always laid downwards so that the fire may not break into bright flame. Gradually more peats are added, and when all steam has been got rid of, the last aperture in the building is closed, viz., the little smoke-hole at the top of the picture (FIG. 6). When the pots are taken out of the smoke-kiln at the end of about four days, they have a pretty coffee-brown colour. The tarry component of the peat-smoke has sealed all the pores, so that after having been fired the pots are capable of holding liquids, though the temperature of the firing does not itself make the walls of the vessels impervious; this will only take place at over 800 degrees centigrade.

The firing is done in a flat field, and preferably in still, dry weather. In former times the vessels were stacked on a layer of peat and straw, in groups of three inside one another, the larger ones covering the smaller. At the present time, since large jars are not produced, iron coverings are used, such as oil-drums sawn across. While being taken from the smoke-kiln to the firing-place the pots must not be allowed to cool off, or else they will draw moisture out of the air. When they are put under the covers, peats are stacked over them, and the fire is lit (FIG. 7).

Fire is applied evenly all over by means of a tuft of straw or heather. The pots will not stand great heat, especially at the beginning, and the fire must not be allowed to burn brightly anywhere; at the same time it must be protected from cooling as a result of a shower of rain. According to investigations made by the National Museum, the temperature in the 'kiln' is about 500 degrees centigrade and never reaches 600 degrees. After two to four hours the pots are fired, and the 'kiln' is allowed to lie for half a day, a watch being kept to see that the ashes do not slip from the edges of the covers. If this should happen, the fire burns up brightly on the ground-layer underneath, and the pots are spoilt. Even after the ashes on the covers have been removed so

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that the pots can become cool, the edge must be covered with earth or ashes so that the ground-layer may not catch fire. After two or three hours cooling the completed pots are brought out. They are now dead-black, and the parts that have been treated with the smooth flint are a shiny black because the surface here is extremely smooth. The black colour is due—as was long ago pointed out by Franchet⁷—to the exclusion of air; in other words, the vessels are fired in a reducing flame, whereas an oxidizing flame produces red wares. For the same reason the clay covers of former times were always grey-black and more or less flamed. They could not be entirely protected from oxidation.

No complete investigation has yet been undertaken of Danish black pottery from the beginning of historical times to the present day. The medieval wares in particular need thorough study, since there are a good many definite fixed points available, provided by pots found containing coins. In view of the considerable export of Jutland pottery which took place particularly in the 18th century, it is here that one should be able to see some typical representatives of the products of later times. Most of the exported Jutland pots, including a couple of specimens in English museums, come from the Varde district, northeast of Esbjerg. They are characterized, as FIGS. 8–10 show, by ribbon-shaped lugs which are most frequently set vertically. Horizontal lugs also occur, but are not as a rule ribbon-shaped. The feet are always prismatic in section, and one of them is generally placed immediately below one of the lugs. On the sides there is usually an ornament of bright ripple-marks in rather loose and easy style. FIG. 8 shows quite a small pot that has been used for cooking sauce, etc., and FIG. 9 a large pot which could be used for cooking, but was also frequently used for storing urine which was employed in dyeing. FIG. 10 shows a shallow pot which may occur without feet and sometimes has only one lug; it was also made in the Varde district. Finally a number of coffee-pots were produced in the same region (FIG. 11), but these were no doubt seldom exported.

The north Jutland pottery types are easily distinguished from those of the southwest. The feet are generally rounded cones, and in particular the lugs are different. FIG. 12 shows a pot from northwest Jutland, dating from the end of the 18th century. It is prettily ornamented by rubbing with the afore-mentioned smooth flint. The rim is tongued and the lugs are square in section. More often, however, the north

⁷ L. Franchet, *Céramique Primitve* (Paris, 1911), 20 ff.

PLATE I



FIG. 1 (upper) THE RIM IS ROUGHED OUT, AND THE INTERIOR HOLLOWED OUT
FIG. 2 (lower) THE SHAPING CLOTH IS LAID OVER THE RIM (see p. 149)

PLATE II

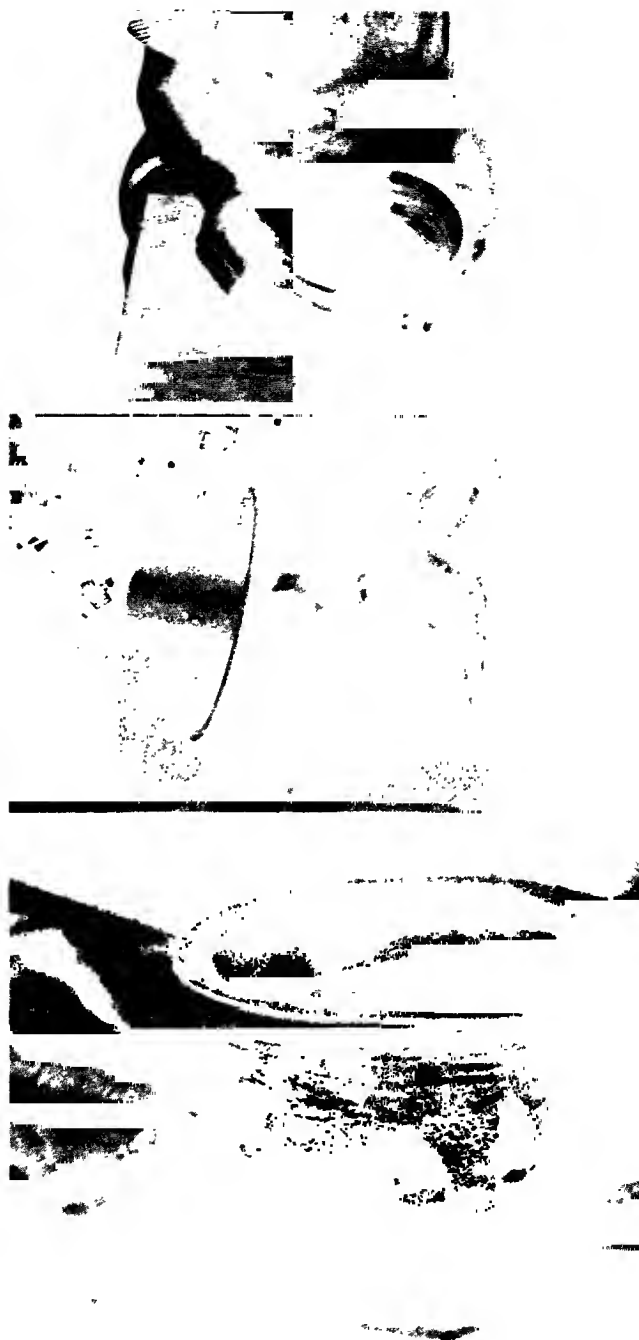


FIG. 3 (upper) THE RIM IS SHAPED

FIG. 4 (middle) THE BODY OF THE FOIL IS PRESSED OUT WITH THE HANDS

FIG. 5 (lower) A LUG IS PUT ON See p. 149

PLATE III



FIG. 6 (upper). THE POIS ARE TAKEN OUT OF THE SMOKE KHUN (see p. 150).
FIG. 7 (lower). THE POIS ARE FIRED UNDER BURNING PLANTS (see p. 150).

PLATE IV

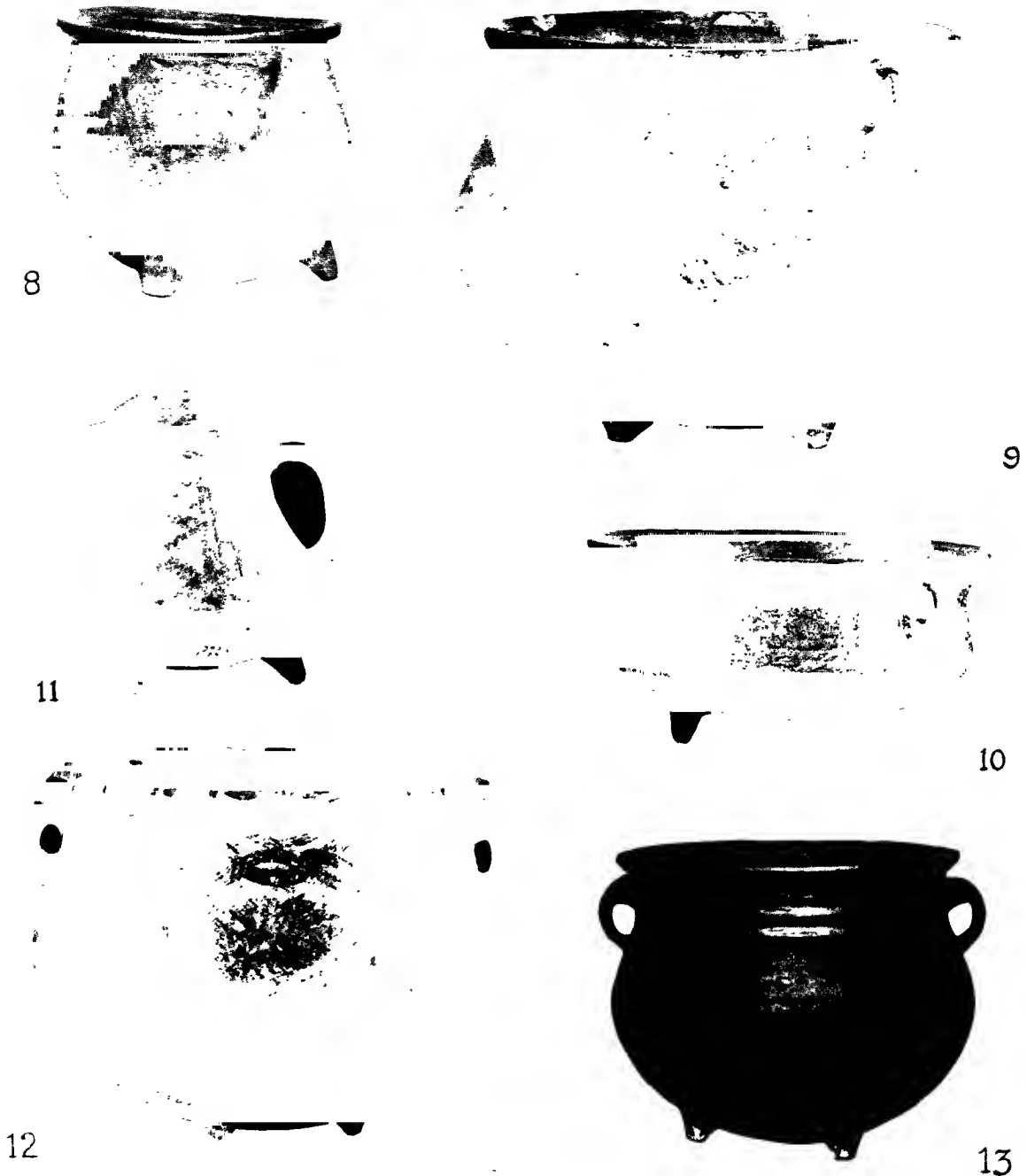


FIG. 8. SMALL POT, Varde district. (Figs. 8-12, see p. 152)

FIG. 9. LARGE COOKING POT, Varde district.

FIG. 10. SHALLOW POT, OFTEN MADE WITHOUT LIP, Varde district.

FIG. 11. COFFEE POT WITH GEOMETRIC DECORATION, Varde district.

FIG. 12. DECORATION BY BURNISHING WITH A FLINT (sw. Jutland).

FIG. 13. CONCENTRIC FURROWS ON NECK (East Jutland).

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Jutland jars appeared with very large lugs—a legacy from the Middle Ages. FIG. 13 shows a pot from the region between Aarhus and Viborg—an eastern type. It is specially remarkable for the concentric furrows on the neck, which feature is also derived from medieval forms. The range of forms of the Jutland pots is, however, much larger than the examples given here would suggest.

In the hey-day of the production of Jutland pottery, which seems to have coincided with the times of poverty in the 18th and early 19th centuries, these wares were exported by ship and horse to the whole of northern Europe, especially over an area extending from Holland and Norway to Livonia and far down into Germany—as far as Berlin, Dresden and Vienna. The enormous improvement which took place in Danish agriculture in the last half of the 19th century, and the extensive ploughing and planting which after the loss of the Duchy of Slesvig in 1864 reduced the area of the Jutland moors to a minimum, were followed by the decline of the pottery industry. The economic revival made proper farming profitable, and brought about stagnation and retrogression in the old sources of extra profit hitherto enjoyed by the poor moorland areas, viz., the making of pottery and wool-work. The Jutland pottery industry received its death-blow with the general introduction of the kitchen-range, together with the spread of new and more efficient fuels. Also the centralizing and rationalizing of the milk industry and of the production of butter, through the setting-up of cooperative dairies since the 1880's, all went to make the manufacture of Jutland pottery superfluous. This thousand-year-old industry was threatened with extinction.

In the years round about 1910 interest was awakened once again in this venerable national pottery. A market was created for its production through exhibitions round about the country, and today it is no longer an object of contempt as it was for the last century and a half. Now it is a rare and much-sought-after object of domestic industry, the producers of which cannot nearly manage to satisfy the demand. It has also aroused European interest because the making of pottery without a wheel is without doubt extinct, apart from certain districts in Greater Russia and perhaps in White Russia. Thus this home-industry of Jutland provides the best opportunity for studying methods which resemble those used in the primitive pot-making of prehistoric and medieval times, and for this reason it deserves to be known also by antiquaries in other European countries.

Dead or Alive?

by W. H. RIDDELL

‘When two men cannot agree over the price of an onion who shall decide what happened in the time of Yu’.—Ernest Bramah, *Kai Lung’s Golden Hours*.

IN ‘A New View of the Western European Group of Quaternary Cave Art’ (published in the Prehistoric Society’s Proceedings¹), Mr P. A. Leason has lobbed a bomb into the complacency of those of us who admire the incomparable vivacity with which the old hunter-artists depicted the big game they hunted for food.

Since Mr Leason is himself an artist, his novel and almost revolutionary views deserve careful attention, and whether we agree with them or not we can still be grateful to him. At least he has made us think.

Mr Leason’s thesis, if I understand it aright, is shortly as follows. Although the artists of the Old Stone Age set out with the deliberate intention of depicting living animals either at rest or in action, they availed themselves for this purpose of dead models posed on the ground more or less in the attitudes they wished to portray. Furthermore their scrupulous fidelity to these models was such that, in their finished works, the model’s deadness, to the seeing eye of an artist like Mr Leason, ‘sticks out a mile’. At first, indeed, Mr Leason was actually misled into thinking that all cave-drawings were intended to depict dead animals.

In the course of his carefully wrought argument he analyses a number of the best known palaeolithic drawings. Considering them as representations of living animals he points out certain faults which many of them have in common, in particular the surprising frequency with which feet that should stand foresquare on the ground are given a ‘tiptoe’ position; the many occurrences of a hoof or paw drawn full-face though attached to an animal in profile; the absence of any sign of weight bearing on the limbs in the general modelling of a beast’s body; and the placing of the legs, in some instances, in such a position that they could not keep the beast erect. He draws attention also to protruding tongues which resemble more those of slaughtered beasts than the live tongues of, say, a ‘bellowing’ bison or a ‘belling’ red

¹ 1939, vol. v, pp. 51–60.

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deer stag ; and to tails whose carriage is unnatural upon a living animal, though possible and even probable on a dead one lying flat.

Mr Leason reinforces this formidable indictment with reproductions of Stone-Age drawings showing the faults in question, and he adds his own photographs and outline drawings of animals lying dead to illustrate his contention that all these faults could readily be derived from dead models posed, so to speak, beneath the artist's eye.

In addition he shows that the nearer feet of an animal standing in profile are often drawn at a higher level than the further feet, which is precisely the opposite way we should draw them today. From this and other incidents of a like nature, such as the prominence often given to a beast's underside and lower jaw, he draws the justifiable conclusion that the painter's viewpoint was on a lower level than the animal's feet—an event little likely to happen unless he was copying from a dead model on the ground before him.²

Now is it not possible that Mr Leason is attributing to these ancient hunters a degree of sophistication to which they had not, in fact, attained, and that most if not all the faults he finds admit of a simpler, more 'artless' explanation.

Living and truthful as the best works of these ancient artists seem at first sight, it is difficult for us to credit such simple folk with the miraculously modern behaviour which an elaborate employment of models involves.

Let us picture to ourselves the sort of men they were and the kind of life they led. They had few possessions—no more than they themselves could carry, and little more than the tools and weapons of their hunting craft. They were completely self-sufficing : whatever they had they made for themselves, for they lived thousands of years before the first emporium. During the warmer months they were incessantly on the move—as hunters must be—following from spring to autumn the seasonal movements of the game, which, in those days, as in the Africa of yesterday, were unconstrained by fence or civilization. They spent their days watching the game-herds, unconsciously learning their habits and the surest means to approach and attack them. Starvation was the ever-ready punishment for those who failed to learn. Winter's approach intensified their labour. In addition to daily needs they had to lay up sufficient meat and fish (this was the date salmon spawned

² A summary is always unfair to an author's views. I have done my best with the space at my disposal, but I would beg readers to study Mr Leason's own words and illustrations in the Prehistoric Society's Proceedings. They are of great interest.

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in the shallows) to carry them through the bitter months of the ' Glacial ' winter. Winter itself brought a relenting. Deep snow made hunting practically impossible³ while unbroken frost gave them a natural cold storage for their hoard of food. It was only during this season that they resorted to the shelter of the caves and only then that the artists among them found leisure and opportunity to work.

The drawings themselves are our best guide to the men who made them. Perhaps the most immediately noticeable thing about them is their resemblance both in character and simplicity to the untutored and spontaneous drawings of a child.

Except that their minds were coloured by the incalculable complexity of sexual maturity, one might say that the men who did these drawings possessed the mental calibre of modern children between the ages of 9 and 12—the private school age of our English young.

In size of brain Cro-Magnon man fully equalled modern man ; so may an intelligent native of any African hunting tribe today. But in capacity of apprehension the African native lags behind the white man and so, one imagines, did Palaeolithic man with 150 less centuries of history behind him. By crediting the latter, when full grown, with a mind whose grasp resembles that of a modern intelligent boy of, say, 11 or 12, we explain much that is otherwise obscure.

This is, *par excellence*, the hunting age, the age of catapult and snare, the age of bird's-nesting and that modern aberration of the hunting instinct, the collection of trifles like stamps or butterflies. It is at this age that a passionate and inquiring curiosity into external things first awakes, and when an unconscious and uncontrollable urge to imitation works at full force. The latter urge is the unconsidered parent of the Arts.

The spontaneous drawings of a boy have for subjects only those things that interest him deeply—his home, parents, a horse, or some particular pet. He treats his choice, just as the old cave-artists treated their choice, which was big game, with the utmost degree of liveliness and the smallest expenditure of executive labour. Even so inanimate

³ There may have been some slight winter activity. Professor Sollas in his *Ancient Hunters* (fig. 318) reproduces an engraving on a bone-pendant from St. Marcel which looks very like a sledge. There is however *no* evidence that either dogs or reindeer had yet been broken to harness. Also we might, very doubtfully, guess that the two diamond-shaped objects above the Lorthet group of deer are snowshoes. This is clearly a late autumn scene. The conjunction of fully antlered stags with water full of salmon indicates as much. It is just possible these stags were meant to be swimming a river: but it would be too fanciful to regard the two snowshoes (?) as a date—Snowshoe Time, i.e. Beginning of Winter.

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a thing as a house he enlivens by the clouds of smoke which issue from its chimneys. He chooses invariably a profile position for any animal he draws. It is the only one he can manage with confidence ; for he scorns any use of a model, finding its mass of complicated detail more a hindrance than a help. Is it not probable, nay certain, that the procedure of Stone-Age artists was the same ?

There is little evidence in ancient works of art, long posterior to cave-art, to show that models were in common use. Except for some remarkable portrait-statues of ' Old Kingdom ' date in Egypt we must await the Grand Century in Greece before we get convincing evidence of that. To this day Chinese and Japanese artists working in unbroken tradition of something like 2000 years never use models except for an occasional preliminary study ; they rely wholly on a highly trained memory for the production of their finished works.

Mr Leason himself hints at the difficulty of believing that the cave-artists of Western Europe thousands of years ago had so far anticipated modern methods that they habitually used models, and relied almost too slavishly on their help : and certainly it is not easy to believe it.

On the other hand it is by no means improbable—Mr Leason, indeed, has made out an almost unanswerable case for it—that *these old artists unconsciously allowed their visual impressions of their quarry as it lay dead, especially with regard to certain intimate details, to influence strongly their many, but less 'close-up', visual memories of the living beast.* So strongly did these 'close-up' impressions of dead animals influence them that it 'shows through' clearly in their work.

For this interesting and important discovery Mr Leason has earned the thanks and deserves the congratulations of all who have made Cave-art their study.

We must remember that these ancient hunters had no domestic animals. They had no chance to study at close quarters and at leisure the game they hunted daily . . . until it was dead. The only time they came in close contact with living game was towards the end of some long absorbing hunt. The scurry and excitement of the kill however gave them neither chance, time, nor inclination for the quiet and careful observation an artist needs. That opportunity came when the hunt was over and the quarry in hand, prior to its being cut up for food. This was the only moment the artist had to note such details, for example, as fetlocks and hoofs. In point of fact his best means for familiarizing himself with the latter came from his daily study of spoor—a subject to which I will return in a moment.

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Those of us who have conscientiously studied wild game in the field know to our cost that, in spite of modern binoculars, those parts of a wild animal's anatomy least susceptible to study are its fetlocks and feet. They are rarely visible owing to the grass. Our best chance comes when the beast in question lifts its foot from the herbage in the act of walking. In that action the raised foot, be it noted, takes naturally a drooping or 'tiptoe' position.

It is therefore no matter for surprise that the feet and legs of the cave-artists' big game are the parts over which he most often blunders. Often his boylike impatience with troublesome detail induces him to generalize the legs and leave out the feet altogether. You will find hardly a foot on any of the animals in the Spanish cave of Castillo which contains a number of good drawings. Anyone who cares to go through that invaluable little book of reference, Salomon Reinach's *Repertoire de l'Art Quaternaire*, will find the absence of feet one of the commoner traits of Palaeolithic Art. One example I will cite here for a double purpose,—an excellent but very primitive drawing of a bison—Aurignacian in date—at La Grèze on the Dordogne. Besides the entire absence of fetlocks and feet this drawing exemplifies another not uncommon trait. Though body and head are in strict profile the horns are drawn full-face. This form of error crops up continually in ancient art because it never occurred to the artists of those days to refer to a model, that being a thing which was never done. Egyptian Art is haunted by it. Dynasty after dynasty puts the same full-face eye into every human profile, the same full-face torso on to profile thighs and legs.

Mr Leason suggests that the presence of full-face hoofs upon a profile bison arose from the use of a dead recumbent model with an inturned leg; and that the 'tip-toe' position of the feet occurs because that is their normal position in an animal lying dead. Is it not simpler to account for both these errors by the supposition that the artist used no model at all? He was relying on a muddled memory in which dead and living animal poses played contradictory parts.

I imagine that this 'tip-toe' position when combined with a full face aspect—a conjunction almost universal at Altamira—was forced upon the artist, much as a conjuror forces a card, by his mental picture of the animal's footprints on the ground, in other words, its spoor. For him this was a far more vivid and familiar picture than the actual feet themselves.

If you were to wipe out the bisons on Altamira's ceiling, leaving only their feet, any unprejudiced observer (but for choice a professional

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hunter) would at once recognize these detached and casual feet as no bad representations of a bison's spoor.

Oddly enough this 'tip-toe' position is astonishingly effective. It helps to give an air of expectancy to the animals on which it occurs. You get the impression that they are metaphorically as well as actually 'on their toes'—a condition of life in which all wild animals live.

Mr Leason will be the first to agree that the majority of cave-paintings could not have been done direct from models. To drag any model, let alone the vast carcase of a bison, to the places where many of these drawings occur was a physical impossibility. Apart from insuperable obstacles the labour would be prohibitive, as anyone who has visited the caves will be aware. You could hardly get a roe-deer through the 'Rubicon' passage at Font-de-Gaume, and to reach the two famous clay-models of bisons at Tuc d'Audoubert you must take a boat or swim.

The alternative, which, if I understand him correctly, Mr Leason advocates, is that the cavemen deliberately made studies from models outside, scratching them with a flint-graver on any handy object, with the intention of transferring them to the cave-wall later. A number of small palaeolithic engravings might have served this purpose. There is one in the British Museum from Bruniquel, for example, which I have picked out, I fear a little mischievously, because the drawing of the bison's hocks, knees, fetlocks and hoofs is impeccably correct though the drawing as a whole is a poor one. But there is better evidence than that. Upon a shoulder-blade found at Altamira the head of a red deer hind is scratched. Ten miles away at Castillo there is an engraving on the cave-wall of the head of a red deer hind precisely similar in pose, style and technique. Mr Parkyn in his *Prehistoric Art*, p. 121, reproduces the Abbé Breuil's careful copies of these two side by side. Willing as I am to agree that the same artist did both, the coincidence does not convince me that he used one as a study for the other or that in those 'high and far off days' the making of preliminary studies, any more than the regular employment of specially posed dead models, was a common custom.⁴

We must turn now to other points in Mr Leason's indictment,

⁴ Mr Leason points out that the backward-turned head of the rear stag in the Lorthet Group could be arranged on the ground for model purposes by using the antlers as a prop and he gives a photograph of a dead sambur so posed. This is true enough ; but the backward-turned head of the equally famous recumbent bison at Altamira could not be arranged this way. A bison's horns point forwards.

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namely the protruding tongues of supposedly 'bellowing' beasts and the frequently unnatural pose of a tail. The former might be more readily accounted for by careless drawing than by slavish reliance on a dead model. It might even be a mischievous addition by a later hand—the kind of boyish hand that decorates the pretty lady on the soap-poster in tube-stations with a sergeant-major's moustache; but I am inclined to agree with Mr Leason that the memory in the artist's mind of many slaughtered beasts with their tongues out did in fact strongly influence his work. In the matter of the tails however I regret to find myself in complete disagreement with Mr Leason.

One of the minor problems of an animal-painter is to endow his subjects with tails that are at the same time natural and significant: an animal's tail being one of its most potent means of expression. In the wholly dumb giraffe it is almost the only one he has, and very eloquent it is. The cave-artist, in his best works, upon which Mr Leason—very fairly—bases his whole indictment, takes this obstacle in his stride. His drawings, reproduced in Mr Leason's paper, proclaim his success better than words of mine. Let us, however, run through a few of them, giving them (in brackets) the reference numbers under which they there appear.

The pendant tail of the woolly rhinoceros of Font-de-Gaume (1) aptly completes the placidity of the whole pose. This admirable early drawing might have been copied from a lethargic white rhino in the Lado Enclave. In (8)—an old bull-bison about to charge, which is perhaps the best of all the Altamira bisons—the slowly rising tail speaks of his slowly rising anger. In the galloping wild boar of Altamira (10), which I should prefer to describe as a leaping boar, the erect tail is a typical signal-flag of sudden alarm. The extended tail or scut of the galloping St. Marcel reindeer (25) plays its small part in the suggestion of speed. The rigidly still tails of the two aurochs of Teyjat (34 and 35), combined with their general pose, express watchful alertness. In the justly famous charging mammoth of La Madeleine (36) the flourish of the raised tail is an accurate index of his fury. Finally the raised scut, together with the stamping off-hind foot of the grazing reindeer of Thayngen (44), rounds off a faithful picture of a beast plagued by flies or midges. On any hot summer's day you may see its parallel among the deer in Richmond Park.

Now in these examples—all of them masterpieces of palaeolithic art—the tail, far from playing an inert role, acts as a definite clue to the artist's intention,—as it were the keynote of his composition.

DEAD OR ALIVE ?

There is yet another point in Mr Leason's argument which is susceptible to an explanation other than the one he favours. The fact that the further two feet of a beast in profile are frequently drawn at a lower level than the nearer two, convinces him that the artist was sketching a dead animal with its feet towards him, for thus only could this error arise. There may be a simpler psychological solution. It may be a topsyturvy experiment in perspective on the part of an artist whose knowledge of perspective was nil.

Picture for a moment the Altamira artist at work on his big red deer hind, which is a good example of this particular error. He would first draw the head and body. Then, standing, or rather crouching (for the ceiling is low) immediately below what he had drawn, he would proceed with the legs and feet beginning quite naturally with the nearer ones. When he got to the further feet he would instinctively reason something like this : ' In nature these two feet are further off, so I must place them further off '. As a natural consequence he draws them further away than the two nearer feet *from where he himself is standing*, with the unfortunate result we see. That, I believe, is all there is to it.

The quite modern perspective notion that the flat surface on which an animal stands, when below eye-level, must slope upwards in a picture was far beyond the reach of these great artists of the dawn, as indeed it was beyond the reach of countless accomplished artists after them. Our modern pictorial perspective is merely one of a number of approximate methods for solving the difficulty of presenting in two dimensions the complicated events of three. The Stone-Age artist knew nothing of any of them and cared less. He gave no thought whatever to foreground, background or even the ground on which his animals stood. Mr Leason would persuade us he was old enough to know better ; I prefer to think he was much too young to care. Simple-minded hunter that he was it seemed to him of no importance that the legs of an animal should be so disposed as to support its weight. All he cared about was that they expressed his intention and looked more or less roughly right. The ' trotting ' boar of Altamira was one of his failures. He gave it, without success, as many legs as a spider and then gave it up. A surplus leg or two is a common feature in cave-art.

Who can fathom the minds of men who are so distant from us in thought, habit and time ? They may have considered it of no consequence that the animals they painted on the cave-walls appeared to be floating in mid-air. They may have meant them to do so, intending them to be no more than the ' baseless fabric of a vision ', spirit-shadows

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of the big game they would hunt in the flesh after the long cold winter was over ; fondly believing that these painted images would help them to gain ' dominion over all the beasts of the field '.

One thing is sure. The caveman's knowledge of anatomy was more a butcher's knowledge than an artist's. He was entirely ignorant of what muscles were brought into play or prominence in order to overcome this or that force, but he could find his way blindfold to that part of any beast's anatomy which harboured the most succulent meat. The tenderness of a brisket or a ' Bath chap '—parts that he occasionally emphasizes in a drawing—held no mystery for him.

Mr Leason's careful comparison between the Stone-Age artist's drawings on the one hand and his own outline-drawings of dead animals on the other has had an unexpected result. His intention to show their similarity has only emphasized their startling difference. His dead animals look nothing else but dead—a tribute to the camera's fidelity. The caveman's drawings on the contrary look amazingly alive. Note the sweeping synthetic curves, tense as steel-springs under stress, with which they bring their beasts to life. How little they resemble the flaccid lines which render faithfully the deadness of Mr Leason's beasts. Even those animals in the caveman's drawings which are clearly intended to be wounded or falling—and there are many such—have about them a suggestion of tautness and resistance wholly alien to the limpness of a corpse.

The many inaccuracies of cave-art, which others besides Mr Leason have been quick to point out, fade into insignificance before the positive virtue of this living and vivid presentment. It comes from no model dead or alive. It emanates from an emotional vision—an intense visual memory—in the artist's mind, working down from his brain through arm and hand to the surface on which he works. He draws, it is true, as a child draws, with no regard for tedious and unnecessary detail but with a most anxious searching for that Something, known for more than a thousand years to Far Eastern artists as *Sei-do*, that is to say, Living Movement, the modern slang for which is ' Swing '.

NOTE:—Reproductions of the drawings referred to in this paper are accessible to English students of Quaternary Cave-Art in Baldwin Brown's *Art of the Cave Dwellers*, Spearing's *Childhood of Art*, Parkyn's *Prehistoric Art*, and Sollas's *Ancient Hunters*. Many of these illustrations are derived ultimately from the innumerable and scrupulously accurate copies made by that great French prehistorian M. L'Abbé Henri Breuil, to whom all students of this early and, at times, somewhat inaccessible Art owe an immense debt of gratitude.

From the Stone Age to the Motor Age

A Sketch of Norwegian Cultural History*

by A. W. BRØGGER, Oslo University

UP to a century ago there still stood on the farm Li in Østre Gausdal, near Lifossen, Gausa, a stone bearing this runic inscription from the days of Olaf the Holy: 'Eiliv Elg carried fish in Rausjøen'.

In ancient times, as in our own, to carry fish meant to transfer fry in the lakes and waters—to stock as ova and allow to spawn. All fish in our mountain tarns has been carried up by folk in this manner; the Gausdal inscription has commemorized this remarkable and, technically, very difficult chapter in the conquest and cultivation of the country. Eiliv is merely one of a thousand and he had this inscription incised not as any memorial, nor in self-glorification, but to proclaim juridically that now the fishing rights of Rausjøen were his.

Very few of those who in the course of thousands of years have built and settled our country and who have become the possessors of land and of fishing waters, of forest and fell, islands or a stretch of strand, have left behind them title-deeds of such transient nature as this. Unique among them all is the famous *Kårstad* inscription from Nordfjord, with these simple, remarkable words: 'I, the stranger, the man from Bavaria' telling of a settler from Central Europe nearly two thousand years ago who took up property in Nordfjord.

During the Great Migratory Period, the Viking Age and in Medieval Times, our own countrymen on an infrequent occasion also registered their claim in a more permanent form, as is seen by the runic inscription on the Sandavåg Stone, Faroe Islands, where stands 'Torkel Anondarson austmadr af Rogalande bygde thenna stad fyrst'.

For that matter, all the Norwegian, Swedish, Russian or other hunters and mining prospectors, who were on Spitzbergen last century, did nothing different when nailing a few packing boards to a wooden stake, thereby notifying a claim for future working.

*Reprinted from *Særtrykk av Norsk Geografisk Tidsskrift*, vol. VII, 1939, by permission of Dr Brøgger, of Oslo University, and the publishers.

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But otherwise the great thousand year-old saga of the settlers still lies hidden in so many varied ways ; it is only now that we are about to discover and record it, but we have still far to travel to collect everything in one single comprehensive survey from the times of antiquity down to our own—or, to express it by a slogan : *From the Stone Age to the Motor Age*.

There were always some who asked. When going about the farm, when walking behind the plough, when sowing corn or cutting the grass, folk wondered who it was who first cleared the acres and the holdings ; who found the outfields and farmed them ; who made the animal graves and traps among the mountains and on the slopes. And they must also have wondered in this way when, with their oars across the thwarts, they sat in their boats out on the wide fishing grounds. Who was it who found these fishing banks ? Who was it who protected the haunts of the seal and knew the whale bays along the coast, north and west ?

‘ Who lived here in the land first ’ ? asks King Olav Tryggvason when sailing southward along the coast. A man stands on a rock and shouts to be taken off, they steer inshore and get him on board, the king being happy at talking to the man for he knows so much of the olden times, says the saga. The man goes on to tell of ogres and giants who once were the first to live and rule in the land alone ; then a deadly disease fell among them and they died, and thereupon came folk from the countries to the east and began to build.

This old man undoubtedly must have known a great deal about the ancient times and the people of the land—more than we believe, because it has been lost. Did people know that once there had been a Stone Age and a Bronze Age in the country ? Certainly they did ! We have, in fact, a relic in a living name. In 1907, on the farm Viste near Stavanger, was made one of the most remarkable Stone Age finds—a habitation of a hunting and catching folk of some six or seven thousand years ago. It happens that in the very farm name of Viste there reposes a—let us express it—purely archaeological observation. I refer here to the well-known place in Are Frode’s *Islendingabok* where he speaks of Eirik Raude’s voyage of discovery to Greenland. When journeying around, it says, they came upon *mannavistir* both in the east and west of the country ; they also found boat remnants and stone implements (‘ Steinsmidi ’) of a people who had travelled in the country long before the arrival of Eirik and his men. Are Frode uses the word *vistir* here as we do in the name of the Norwegian farm where

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the Stone Age habitation was found, as the homestead of a Stone Age people. He and his contemporaries used it to distinguish between *bygd* (district) and *bygdarmenn* (men of the district). In the story of Sunniva the Holy and her people landed on Selja, the saga also distinguishes between *bygdarmenn* and those who live by hunting and catching and keep to the old *mannavistir*.

Relics of the Stone Age people have therefore also been evident enough to those who, in a much later age, cleared and cultivated the country. They did not at all view the Stone Age people as being somewhat more primitive—on the contrary, they took up their stone axes and thought that ogres and giants must have handled such objects. They stood wondering, very much like ourselves, although much nearer—we who through the technical progress of our age have lost all comprehension of what ancient culture really was. Once they even met a Stone Age people, the meeting being narrated in a manner more living and real than any ethnographic description of several centuries later. It was when the Norwegian Greenlanders on their great colonizing expedition to North America, in the time of Olaf the Holy (995–1030), encountered some Indians. They themselves had the best iron weapons and requisites of the age; the Indians, stone arrows and axes. One of the Norwegians fell in the battle, and the woman Freydis, wandering in the woods, sees him lying there, a stone axe in his head. Later, the Indians found the body and saw an iron axe alongside. This was something they had never seen before so they picked it up, says the saga, and tried it on a tree. They all took a turn and considered it bit excellently. Later, however, one of them picked it up and struck with it against a rock; the axe was shattered, whereupon the man, finding it could not withstand stone, thought it of little use and threw it aside.

Some fragments of this saga from the Stone to the Motor Age have been found from time to time. Its lines may in part be traced here and there if we search for them in the very foundation of the folk-culture throughout these thousands of years—the working day and livelihood such as evolved from all the available potentialities that were to be found; the conditions of life the country itself has given from the very earliest times until today. The great main considerations are still somewhat the same today as they were 6000 to 8000 years ago. It is technique which is different, likewise the human material that has created the rhythm in the multi-thousand year-old saga. What is cause and what is effect, need not be entered upon here—that

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belongs to another idea-association. I would merely say in this connexion that I have the greatest suspicion of the generally accepted view of this so-called 'development' being a wholly uninterrupted and logical progression from antiquity down to today—of the so-called primitive Stone Age culture as compared to that of the Bronze and Iron Age; of the stereotyped belief in a steadily increasing development; in a constantly increasing curve where each phase merely collects in order to hand over to the final perfection of our own times, the whole of a kind of preparatory process in order to produce our modern age. The great and new contribution of archaeology, not least owing to the wide dimensions with which it can operate, is just the being able to show that the course has been something quite different—large, long, ups and downs with cause and effect still little known.

To be able to approach any understanding at all of the culture of antiquity, it is absolutely necessary to begin with what we know today—to know the elements in the peasant culture still found in Norway and Sweden some 50 to 100 years ago; to know something of life along the coast and at sea, in the forests and amid the mountains, on the land, the fields, the pastures, the hinterland and the mountain farms. Without knowing something of this, one will never attain to the heart of anything comprised within the ancient culture.

HUNTING, CATCHING AND FARMING

The clearest picture of the oldest culture in Norway is given in the ancient hunting and catching upon which it existed. The archaeological sources, the habitation-finds, revealed by our researches during the most recent generations, tell us everything about all this in a most animated manner; how the utensil-milieu, and the culture of work as a whole, is based upon the annual catch as in all ages of peasant culture. Besides the prodigiously important material provided by the habitation-finds, we have also now re-discovered the illustrations of the hunting culture of this old livelihood—the rock-carvings, the wonderful pictorial material of the culture of an entire epoch. Both from these carvings and from the habitation-finds we learn the fundamental features of the ancient hunting culture. It assumed permanent, definite forms very early. Two kinds of animal dominated this annual culture, the stag and the seal. Both are gregarious and, from an economic point of view, represent large capital resources; there must be added to them, in East Norway the elk, in North Norway the reindeer, both providing not only food—winter supplies—and clothing,

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but also sources of raw material for utensils of every kind (horn, bone and sinews).

The great and fundamental trend of conservatism which has characterized the Norwegian catching and hunting along the coasts and out at sea, in the forests and on the fells, rests today, and did so thousands of years ago, firmly and broadly upon the all-prevailing rule of order in the animal world upon which our catching and hunting culture is nourished. Looking for merely the main sources, it is enough to remember fish—the cod which at the same periods within quite small limitations, returns every year to spawn on the very same banks and coasts. Or of the salmon, which, after a stay of many years far out in the Atlantic on the edges of the mighty deeps, migrates back along the thousands of miles to return not only to the very same rivers in Norway, but to the very same pools in the river where born. Or of the marine birds which every year almost to the day, return to the haunts where hatched, there to breed as birds have done since time immemorial. Or of the seal which with the most reliable regularity each year at the same time, generation after generation, re-visits the same skerries to give birth to young. Or of the whale which, during its migrations, for some days each year at definite times, seeks the same bays and sounds like countless of its kind before. Or of the stag which unfailingly during the same weeks swims the same fjords and channels, like its forefathers have done throughout all time on their annual autumn journeys to the islands of the west coast.

It is conformity to law that creates the rhythm in the life of hunting culture which divides the year into the working seasons of the fisherman and the huntsman, the catching and the chase, the utilization and conserving of the winter supply. It is exactly the same rotation of nature that creates the rhythm in the life of the agriculturist—the nature that awakens, the earth to be ploughed, and thereafter the season of sowing, growing and ripening.

Even today the rhythm in hunting culture is a deep tone in the life of the Norwegian people, sounding deepest in the gigantic whaling carried on in Antarctic waters.

During the first few thousand years of the settlement of the country, the people lived a hunting and catching culture pure and simple, without knowledge of any other domestic animal than the dog. The first innovation and change came when domestic animals and the cultivation of corn became known in the Scandinavian countries some 4 to 5 thousand years ago; it came borne upon the waves from the

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south, new civilizations and new people. Beyond mentioning one fundamental factor, we need not now discuss the forms development took. In habitation-finds of the Later Stone Age, the Bronze Age and the Iron Age, one trait is found repeatedly, namely, there is never any question of a pure peasant culture or of a pure hunting and catching culture, but only of a combination of the two. There are just as many catchers and hunters keeping cows and other domesticated animals and cultivating a little corn, as there are farmers carrying on seasonal fishing. This form of life is natural along the Norwegian coast, and it is this peculiar mixture of these two fundamental elements which shapes the Norwegian peasant culture of antiquity and which, even today, is constructive in the culture of the Motor Age. To mention examples: the peasant aristocracy of North Norway in Viking times, which for more than a century was a forcible factor against the sovereign power, was based upon major farming with corn, cattle and smaller animals besides fishing and catching (seals, marine birds, big game) around the extensive haunts of Nordland. Or, take a picture of modern times: the whaling men operating in the southern seas are not professional, industrial labourers, but Vestfold country youths having small-holdings or (as exceptions) larger farms as their economic background; and one of the most difficult problems in present social policy is just how to find in the major fisheries the harmonic balance between the fisherman as a fisherman on one hand, and the fisherman as a farmer on the other. Most fishermen of Lofoten, Finnmark, Helgeland and Møre are really peasants linked to, true enough, a primitive agriculture with cattle and smaller animals, natural pastures and land, together with a little cultivation of corn.

From the series of archaeological finds we are able to recreate pictures of the oldest form of peasant culture which, in Norway, from the very beginning has preponderatingly been linked to the coast, right from 3000 B.C. Livelihood was then based upon precisely the same possibilities as possessed by the coastal inhabitants of Norway today. The available patches of ground were taken, grain (barley and oats) was sown, domesticated animals were kept—cows, sheep and pigs, which, at all events in West Norway, could manage for themselves out of doors for the greater part of the year. Grazing was to be had everywhere on the islands, holms and plains, and cattle were then, on the whole, really able to maintain themselves. During the Stone and Bronze Ages it was hardly possible to do much with the winter feeding of cattle throughout large areas of the country, and farming

PLATE I



FIG. 1. IRON AGGLUTINATING HOOKS, NORWAY (see p. 171).

FIG. 2. LAPPING KNIVES FROM GRAVES IN NORWAY (see p. 171).
 FIGS. 3, 4. Copyright, Oslo University.

PLATE II

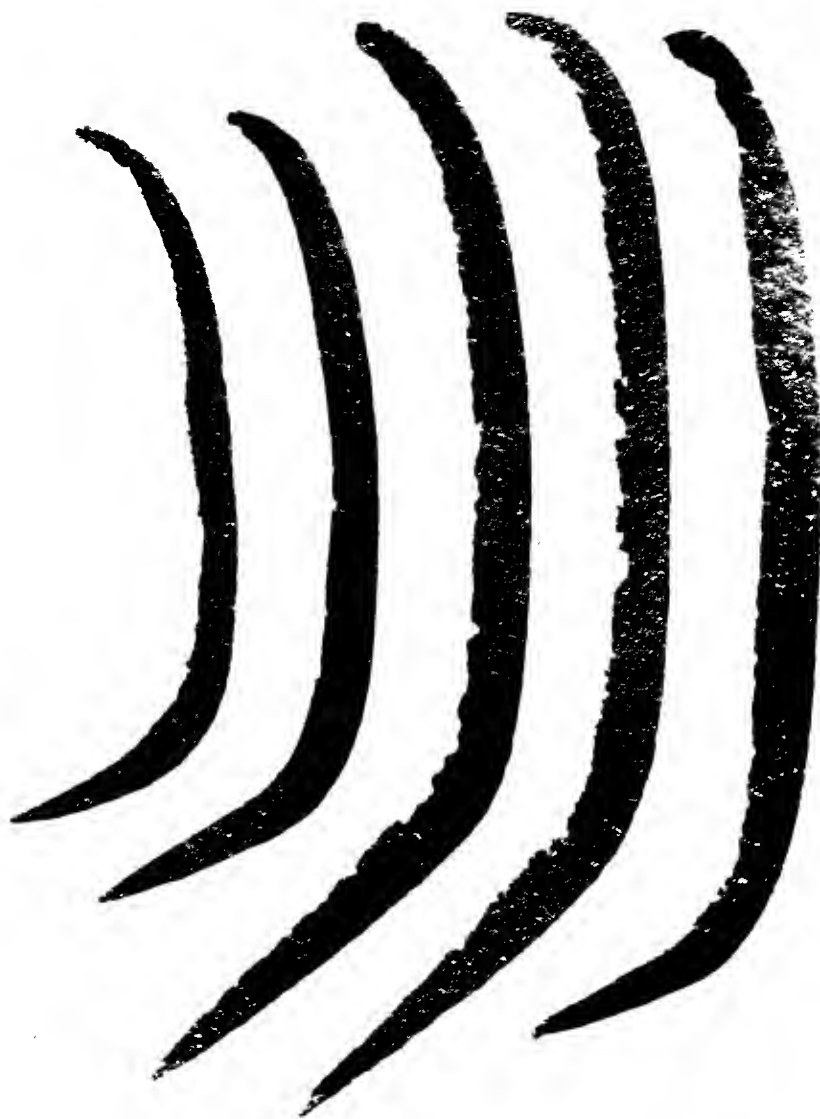


FIG. 3. VIKING AGE IRON SCYTHES, NORWAY (see p. 171)

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thereupon became a gigantic extensive utilization of every possibility, its main principle being to reap as richly as possible of everything nature had to give without making any particular return ; consequently, a working method bound to a constant seasonal change evolves—hunting at due times, the cultivation of grain and the care of cattle at others. At places, the actual production of raw material has also played an appreciable part—the manufacture of stone utensils. We have discovered in the west of Norway some of the large centres where a definite type of rock (the hard green rock on Espevær), has been searched for, the labour involving seasonal working with as much stone as possible being cut at a time and blocks of raw material being carried off to the dwelling places.

This is the economic foundation of the Stone and Bronze Ages in Norway. Its expansion possibilities have been large, in fact, very large, and for some centuries created quite a rich culture such as found expression in the huge burial cairns along the Norwegian coast ; similarly on Lista, Jæren, Karmøy and Møre in the mighty tumuli and in the rich rock-carving provinces in Østfold, Båhuslen and Trøndelag.

With the Iron Age came the first important changes in this hunting-catching-agrarian culture, but cause and effect may still be discussed. Some of the factors which have been of significance are known, but considerable difference of opinion exists in assigning the value to be put to each.

Complete agreement, however, seems to exist with regard to what is termed the change in climate. Rutger Sernander was the first to prove it, and all later investigations of the peat bogs of Ireland, the Orkneys, Scotland, Faroes, Iceland, Denmark, Norway and Sweden, have confirmed him in full. Rarely have the ideas and researches of a worker so withstood the critical test of a generation like those of Sernander have done. We changed from a continental type of weather to an Atlantic, with cyclonic formation, frequent variability and increase in the precipitation in accordance with the cyclone series. In Norway, this entailed an increase in the amount of water carried in the rivers and lakes, to larger surpluses in rainfall which led to the formation of glaciers in the mountains. All the large glaciers in Norway today, Svartisen, Jostedalbreen, Hardangerjøklen and Folgefonna, are new formations of historic times ; they are not remnants of the Ice Age—far from it ! Originating in the Earlier Iron Age, they did not attain completion until the Viking Age and Medieval Times.

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The cyclonic weather type did something more. It swept aside the shield of forest in West Norway which, since the Stone Age, had meant so much in folk-economy. All the skerries and islands of the west were deforested, while on the mountains, the tree-limit fell several hundred metres, on the Hardanger plateau, up to 400. The Stone and Bronze Age geography of Norway and that of the transition to the Iron Age, changed in a radical manner.

In the eastern areas of the north, this climatic change has perhaps meant somewhat sterner conditions but in Norway, particularly along the west coast, it has rather meant a change for the better. Along the entire west coast and on all the islands of the Norwegian Ocean, it created pasture of the finest and most luxuriant kind, and it is easily perceived, *inter alia*, that it leads to a unilateral cattle breeding culture and to an increase in the number of animals, both large and small.

Another factor of the greatest importance to Norwegian peasant culture was also entailed, namely, that more trouble was taken to provide winter fodder and suitable accommodation for the cattle.

From the mapping of our Iron Age finds, we may see how the trend of culture changes. Let me show such an interesting area like North Norway. We can see, for example, how the peasants settled on all the Lofoten and Vesterålen islands, whereas, throughout the whole of the Iron Age, no attempt was made to clear and settle around the heads of the fjords or in the valleys of North Norway. It is only with the technique and increase of population of our times that all these Nordland valleys have come within civilization. The cause of this particular domiciliation phenomenon is the luxuriant pasture of Lofoten and Vesterålen, and the mild winters which, in conjunction with the enormous natural catching and hunting resources of Nordland, created the peasant culture potentialities of the Iron Age. At first, fish was of absolutely no importance in this connexion and it only became so at a much later stage. The same state of affairs brought the islands of the western seas—the Orkneys, Shetlands, Faroes and Iceland—within the sphere of Norwegian economic interest.

Of course, iron itself played a principal part in the technical shaping of peasant culture. Its incorporation therein hardly took long the moment it was discovered that iron could be produced in the country itself from bog-ores and rock-species. What then happened is one of the most significant transformations throughout the whole of our ancient history: the ability to utilize native rock-species—slate, quartz, greenstone, flint—handed down through generations

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yields to the far more pliable material, iron. But an altogether new technical training was required and once more the work of several generations was to be spent on the technical apparatus itself. It was not long before the home production of iron, the ancient *bondejernvinna*, became part of the work of the farm—seasonal labour—particularly in those parts of the country where access to the bog ores was best, a new cultural geography in Norway being created thereby of its own accord.

It is easy to determine the effect of this cultural change. Perhaps the most important step is the iron axe, which from the older Iron Age became the peasant's principal implement all down the ages and at times his chief weapon. In fact, it simply became a part of the mind of the Norwegian peasant for a period of at least fifteen hundred years. The part played by the iron axe in the cultural development of Norway can scarcely be valued sufficiently high. It is the first real weapon against the forest, not merely an implement to render it useful. Moreover, it became fundamental in respect of the Norwegian boat and of timber constructional work leading to churches and the wood architecture expressed in the building of dwellings and store-rooms.

And with the iron axe also came the colonization of the hinterland, the clearing and conquest of the inland parts of Norway.

A wealth of sepulchral and other finds of our Iron Age, enables us to trace development from one century to another. We can see how the great cultural work of farming deals with the various new problems as they arise and how they are solved. Three implements play the principal part: the foliage knife (sickle, FIG. 2) and the scythe are the two chief, and then the reaping or pruning hook (FIG. 1), which, however, did not attain the importance of its two fellows. The knife for lopping off foliage and branches is much older than iron. With foliage as fodder and the utilization of the natural pastures we are confronted by the oldest and most original characteristic feature of both Norwegian and Swedish peasant culture. In the form the knife acquired during the Iron Age, it is a typical Norwegian and Swedish implement, and partly known in Finland and the Baltic States.

Of still greater importance is the scythe (FIG. 3), known to us by reason of the thousand Iron Age finds. It is the scythe which is the great symbol of this agriculture, not the grain hook and still less the plough. The scythe and the foliage knife could preface the history of Norwegian farming. In Magnus Lagabøters law it says *å hoggva hey*—to cut hay. It is a late reminder of the ancient working

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method of clipping the grass, using knife and hook. The history of the scythe, therefore, also becomes the history of a cultural fight, a growth in the development of the human being himself in Norway—from the crawling man with his flint knife or hook clipping the grass, to the upright mower swinging with his two arms and mowing it down in long sweeps. The development of the scythe completes a significant division in the history of agriculture. Behind it lies the emergence of the Norwegian farm, the social, economic and technical unit with the family as its active centre. The finds of antiquity show that it is primarily cattle-breeding that is fundamental and this quite agrees with the picture we obtain when reading the ancient laws. The documents and the atmosphere of the legal language reflect the lengthy development in the use of the scythe and the foliage knife. Cattle (cows and smaller animals, i.e., those termed *smale* in the west of the country, sheep and goats) become value-forming and community-creating factors—not corn growing, nor, usually, the chase, certain areas (the seal) excepted, notwithstanding the principal part this has played in farming down through the Iron Age and in historic times.

THE NORWAY OF THE WESTERN SEAS

The great transformation of peasant culture which took place with the introduction of iron has not to the same degree transformed the chase. (Stone and iron arrows, fire-arms). In reality, this is not at all so dependent upon the question of stone or iron, but in one enormously important sphere, iron proved radically creative in its effect, namely, the Norwegian boat. We know little of the Norwegian boats of the Stone and Bronze Ages, but we do know that with the first Iron Age a new type of boat was evolved and led to the viking ships and all the numerous Norwegian boat-types along our coast which were to remain down to the middle of the 19th century. Iron also created plank work and its particular psychology. The boat, moreover, made possible that great era of our ancient culture which found expression in the viking period expansion across the seas and our maritime culture of the Middle Ages. The boat did not create this, but without the boat, nothing of this would have been possible.

In the slow development of the psychic attitude of generations to maritime life and the sea, enters a cultural-geographical consideration more fundamental than any other in Norway—'skjærgården'—the skerries. From very ancient times the skerries have been the playground of the individual and of the family during maritime upbringing ;

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the skerries both educate and retard ; they are the cause of a deeply-grained trait in the industrial life and moulding of the people. The Jutlander, the Dutchman, and the Englishman, have the sea immediately outside the front door, whereas the Norwegian coastal peasant has the skerries as his castle and his strength.

The boat and the skerries together form the explanatory factor of the history relating to the Norwegian expansion which led to what one terms *Noregsveldet*—the realm of Norway.

In the chronicles of Norwegian and Icelandic discovery, three stages repeat themselves with absolute regularity. The first, given rather uniformly even in the original sagas :—a man at sea, driven westwards before the storm, sights land he has never seen before. This form of narration reappears in our history, in so much of what happens at sea. We read how, so the saga says, Nadodd the Viking desired to sail from Norway to the Faroes and becoming *sæhafi* (losing his way), got out of course and came upon Iceland. And so it is with them all. Then follows the second stage :—people want to travel to find this country, and fit out whole expeditions like Eirik Raude who spent three years in Greenland, one of the greatest and most remarkable stories of discovery in the whole history of Norway. Then, finally, the third stage, colonization itself.

In the course of less than 200 years, the Norway of the western seas achieves actuality. It is not a kingdom, it is rather a very diversified crowd of small Norwegian communities with very frequent, regular inter-communication along a line from South Norway, from the Sudreys (that is Outer Hebrides) and Ireland via the Orkneys which are the ancient Norwegian demesne, the Shetlands, the Faroes across to Iceland and Greenland. In the 13th century a good 200,000 Norwegians resided in this area, against only 300,000 in Norway itself.

In the Chronicle of Håkon and Inge is a short saga-like story of a smith who, during his wanderings, arrives at a small farm in Telemark. The smith is an Odin in disguise and in the conversation that ensues with the farmer he makes a reply touching upon much of the general truth of these things. ' I have now been long on ships ' says Odin ' I have to get accustomed to horseback again '. It is a piece of Norwegian history in a picture.

Expressed politically, it means that Norway gravitates away from the sea, the psychology becoming partly Scandinavian.

This whole phenomenon must have a background in a definite livelihood factor, and in this connexion I might mention that in the

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13th and 14th centuries a colonization en masse took place in Norway—in Oppland, the Gudbrandsdalen and in eastern districts—characterized by the so-called *rud*-names of which we know more than 3000. Obviously, here is a lower class pushing itself forward, its members becoming landowners who, to a large degree, become responsible for the transfer eastwards of the interests of the royal power.

I cannot speak here and now of the whole of this comprehensive and important era of what really happened in the Norway of the 14th and 15th centuries—the period of depression—and I venture, therefore, to skip to the renaissance in the 16th and 17th centuries.

FORESTS, TIMBER AND TRADE

The background of what was to come is entirely European. The first important revival, which came as early as in the 1500's, was due to a combination of factors, the chief being the Norwegian forests. About 1500, a discovery was made in Europe—some believe in Germany, others Holland—which came to have the greatest significance, namely, the water-saw, a water-driven, vertical saw for cutting tree trunks plank-wise. The water-saw, which is a direct descendant of the axe, found immediate employment and dissemination; it characterizes a revolution in the history of forestry. It is not altogether certain, however, that it would have attained the importance it did if Western Europe at that time had not entered upon a boom period, first with the Dutch, then with the English.

You will remember the old saying that Amsterdam rests on timber from Norway. In this great period of growth among the North Sea communities, Norway with her forests and water-power became a kind of Canada vis-a-vis Dutch initiative. The water-saw arose in every single little rapid along the Norwegian coast and that which came consequently is, in all simplicity, a new formative phenomenon of considerable dimensions. The Norwegian community was quite unprepared for utilizing this and, above all, lacked ships and a trading fraternity. In the course of 100 to 150 years, however, Norway had both. Timber in the 17th and 18th centuries created the towns and loading ports of Norway and, during the same period, came the large immigration of foreign families who revived certain sections of the people. The Dutch were the first of the most enterprising ones, then followed the English, Scotch, north Germans, and, not least, Holsteiners and southern Jutlanders. To begin with, the Dutch took over

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both shipping and commerce—note, for example, that most of the maps of Norway in the 16th and 17th centuries are Dutch. They knew each harbour and creek from Båhuslen to North Norway. At first this new urge was of little importance where agrarian culture was concerned, but in time it became quite basic and it is hardly too much to say that herein lies the foundation of modern Norway.

It is not possible to include this exceptionally important material here—how it led to a new Norwegian maritime industry, to training in old but certainly forgotten attributes, to a new use of ancient instincts, to a re-discovery of the sea and the lands of the Norwegian Ocean. In many ways the 17th century is a new Norwegian viking period and one of the most interesting centuries of our history.

That which Norway had not possessed in the Middle Ages—an important commercial community—came with the great renaissance in the 16th and 17th centuries. Of course, not merely immigrants were concerned, but Norwegians. The effect of all this revivification upon the old peasant culture is still only partially appreciated. On the whole, it continued entirely on the old basis of migratory times as a speculatively prodigal method of working, but with some changes and displacements primarily relating to a large increase in cattle-breeding and pasture. At the same time, the coming of the fire-arm and the introduction of mining in the 17th century, entailed considerable modification.

THE GREAT FISHERIES

The most important innovation of the 17th century, however, lay in the sphere of hunting and catching. It was during this particular century that the great fisheries along the coast from Møre to Nordland emerged and, contemporaneously, off Båhuslen. Whereas in East Norway it was timber alone that created an independent trading community and a new Norwegian shipping industry, in West Norway, also in the same years, it was fish-towns like Ålesund, Molde, Kristiansund and others being created by the fisheries of the 17th century.

It is a general misconception to believe that it was the wealth of the sea which caused our oldest forefathers to settle along our coasts. That is altogether wrong. So long as there was hunting and catching enough to be had ashore, and so long as there were seal in the sea, fish was more a secondary consideration. Naturally I am not speaking about domestic fishing from the door-step all along the Norwegian

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coast—that is as old as the people in the country, but it is not fishing proper.

With us, the ancient fishing places are determined by landmarks. Taking, for example, a chart of the Møre coast, and looking at all the old landmarks, it will be found that most of them lie along the banks into which the large cod creeps to spawn. In other words, the ancients of their experience have done the charting with which modern fishing technique operates.

These landmarks, however, also mean that the old method could only be used off-shore for so far as mountains were visible. This limit may easily be found along the coast by comparing the chart sea-depths with the heights given on a land map. There are only two areas in the whole of Norway where these conditions are effectively fulfilled—Lofoten and the Møre coast where the 50–60 fathom curve of the bank, the depth of the fishing, approaches nearer to the coast than at any other place.

‘It was in the year 1742’ says Chr. Gran Molberg, an auditor, ‘that I went out to see this fishing. I had six men in two large “fjøringsfar” boats. We sailed WNW from a promontory on Sunnmøre, rounded so far from shore that the terribly high peak called Romsdalshorn went so near under water that it did not show higher than the three legs of a gryte (cooking-pot). My mate therefore called the place Gryttingen på Store Eggen (the Cooking-Pot on the Large Bank) and said it was 16 miles from shore’.

It is the technical, scientific, maritime usage of the 19th century that has rendered the fisheries independent of the old working method and made it possible for everyone to be a fisherman. Another important factor of olden times is that the particular part of the coast lying between Statt and Lindesnes is the poorest in fish and the most difficult to fish.

Of the two large fisheries, Lofoten is of medieval origin. Møre, of course, is also old, but the rich fishing dates from the 17th century only. Two circumstances have promoted the fisheries—the discovery of the cod line and net on one hand, and the North Sea fishery of the Dutch on the other.

In the great conflict to which the cod line and net gave origin, we see a characteristic encounter between old and new, constantly repeated since in Norway. The hand line fishermen around Ålesund, in 1625, for example, complain that the use of the new line was destructive; the fish, they maintained, were scared away by all that was left rotting

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on the lines. Moreover, they alleged, the line fishermen indulged in such an orgy of cursing, swearing and quarrelling that the fish were frightened off the shore !

The bank fishing gave rise to larger boats and better equipment ; moreover, in the development which occurred in the fishing on the Møre coast, and in the considerable interplay of agriculture and fishing in the case of the same folk and families, lie the interesting and illuminating sources of a single chapter of Norwegian history. Of material there is plenty. The great question how far a fisherman can be a farmer arises repeatedly in the 17th and 18th centuries as a consequence of the development of the new fisheries. We have an excellent picture given in Chr. Molberg's delightful work on the fisheries of the 1770's where, after depicting the poor conditions of the Møre fishermen, their boats and primitive equipment, he writes :

' I wonder whether the life of a worthy, tax-paying peasant is of more value to the State than that it should be a sacrifice to the sea and be perpetually exposed to all the perils to which delinquents of other nations are condemned. Of all the other nations among whom I have travelled and those who make fishing their main business, I mean the Dutch, English and the French, I have never seen a single peasant used herefor unless the peasants themselves have made fishing their main livelihood and thus would hazard either welfare or life. Only the Norwegians are so rash, and of them the man from Sunnmøre, Romsdal, Nord Møre, Hittervær, is the worst '.

The further and principal development of the great Norwegian fisheries only comes with the science and technique of the 19th century.

EDUCATION AND SCIENCE

In spite of all the numerous, new, significant contributions made by the 16th and 17th centuries, the major part of the Norwegian working-day life on land and sea remained, in reality, the same as it had been in Migratory Times, the Viking Age and the Middle Ages. The real renaissance, the transformation to a modern Norway, came with clear lines of development, partly from the confluence of the ancient peasant culture with the new mercantile and marine culture, and partly from the initiative which found literary expression in the education of the 19th century, which is father to the scientific and technical sub-structure of the livelihood of the whole civilized world. Touching lightly, I shall try to indicate the theme running throughout this very obvious development.

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To all the North Sea countries—Norway, Denmark, Holland, England and Scotland—the great centuries 1500 to 1700 represented a new maritime era, a Viking Age in a fresh form. And, of course, this New Period was followed by the theories and thoughts which always marshal to defend the currents of the times—in this case termed mercantilism, the governing ideas of which are sufficiently known.

Actually, the revival in agriculture also sprang from the merchant aristocracy. The soil suddenly became real, the decisive factor. But herein also lies the explanation why the so-called physiocratic school expresses such commonplace ideas. Literally speaking, mercantilism begins to work the soil, to flirt with it, and, consequently, there once more follows the traditionless, revolutionary-stamped physiocratic train of ideas.

Primitive magic held the ancient agriculture religiously slave-bound: it was in the lap of the gods. This has been the case from the commencement of our chronology right down to the 19th century when mercantilism entered with its rationalism and its education—the source of all modern times. Their prophets express themselves more punctiliously. The soil is the real and only source of nourishment says Quesnay in 1758. And amid all this commonplace neo-clearance stands that romantic genius, Rousseau, who, in spite of all contradictions of Voltaire and educationalists, says precisely the same but in a different manner. Let us return to nature say the physiocrats.

The truth in this respect is very interesting but the material is far too comprehensive for the inclusion of any but a few points. By reason of certain decisive technical improvements in production, the English iron industry entered upon a new phase in the 18th century. In the 1740's a Scot, James Smoll, feels his way experimentally until he produces a new, excellent little type of plough which was to become standardized for export to Norway. It was a strong and handy implement, eminently suitable for the Norwegian soil: it had a turned blade and was particularly good for slopes. It was the beginning of the modern method. All kinds of mowing machines, etc., were thereupon experimented with in England.

Or take such a little thing as the discovery in England in 1733 of the flying shuttle, a radical improvement in loom technique. Although Norway, the Faroes and Iceland had kept sheep as a principal source of livelihood right from the Migratory Times, the first real wool looms in Norway came only in the 18th century and then as a result of the English inventions. Or let us recall the English experiments with

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artificial meadow plants, clover, timothy grass and raj grass. Or the potato, introduced into Norway about 1750, to contribute slowly to the transformation of agriculture ; it encountered enormous resistance from the farmers, and we meet again the arguments levelled against the net, the engine etc. More than a generation was required to get the potato thoroughly introduced and then it became a principal medium for regulating stocks.

We could mention innumerable other matters. For the first time in the 5000 year-old history of Norwegian agriculture, man himself goes out to help nature after having tortured it in almost every sphere without giving anything in return—the transition from the prodigality of a thousand years to real cultural usage. Coming externally are all the discoveries and improvements leading to the modern scientific technical reconstruction of livelihood which lays the foundation of the new age. So fundamentally new is this that, glancing superficially, only two large periods are really found in the cultural history of Norway : on one hand the ancient method in the hunting, catching and agriculture of the Stone Age and Iron Age to the 19th century, and, on the other, the 19th–20th century scientific-technical reconstruction of livelihood.

It is not necessary to sum up all this but I would like to emphasize some aspects. The steam-engine and then electricity transformed hunting, fishing and agriculture, and created industry as the co-ordinator of all the sources of modern times. Remember what the development of communication means ! Today it may cost more to carry a barrel of grain a few miles across country in Norway than it would do to send it across the Atlantic. The mountain farms of Norway have been hit hard.

The new technique has shattered the thousand-year old Norwegian agriculture. The ancient principle was to make everything on the farm itself, or, at all events, to be able to do so. Now this is done by the makers of agricultural machinery, the tool workshops, the mechanical factories, the spinning mills, tanneries, and the footwear and clothing factories—everything, yes, even food. The working-day of the farm has assumed a new mien. Instead of resurrecting the old in the glamour of a kind of false romanticism, we should try to understand the fundamental elements in both the old and the new—which are one.

The old community was lightly linked together because the totalitarianism of the individual farm or holding was the main principle. The modern community is exceptionally strongly linked because

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cooperation is the sole possible living principle. The old Norwegian community had few of the prerequisites wherewith to develop a State—the modern, almost too many. The water-saw and the timber, the towns and wholesale trading of the 16th and 17th centuries gave rise to and created absolutism as a form of government in West Europe. Science and technique in the industrial life of the 19th and 20th centuries is transforming and creating a new governmental power.

Hunting and fishing have so far received the greater part of modern technique—with no disparagement to industry. The sea and the use of the sea are in the throes of a mighty development in Norway.

THE MOTOR AGE

The greatest, and for Norwegian conditions perhaps the most important, element of reform has, however, come with the internal combustion engine. History is quickly made in our days. Not a generation ago, fishermen wanted the motor engine forbidden in Norway. Now, not a fisherman could be found to do without.

The motor engine is something more than an extension of mechanical power. It comprises, just in itself, material to regain something of the individual culture the steam engine was about to crush in Norway. The motor engine is the implement of the individual both at sea and ashore. It multiplies effort, it creates a new standard both for the culture of fishing and hunting and for that of farming, unattainable with the late technique. Think of what a motor engine means to a boat previously dependent upon the wind! The engine does not only change the requirements of a boat and enormously increase its utility but it changes the sense of time and distance and decreases seasonal obstacles; it is deepening Norwegian folk-psychology, enriching it, making it more manifold and more awake. It will come to change rhythm of the Norwegian form of expression on every hand. In brief, every young boy now growing up has been born to the beat of its quick measure. They and it will create a new Norway without having the least idea of doing so. The motor engine has given new and immense chances to all the most typical qualities of the Norwegian chase.

In the country, the motor engine has been allotted a great task, primarily in agriculture but also in linking up the various districts. With the theme, therefore, I have sought to indicate, it cannot be any very unreasonable prophecy to call this age in which we live—*The Motor Age*.

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The motor engine has not merely consolidated itself in all our potentialities as a people, but it is about to re-create something of the old invaluable feeling of labour's individual efforts and indispensability, so much of which has been swept aside by machine culture.

These are only a few rough features I have sought to show. They do, however, touch upon problems which today in equally high degree must be solved by cooperation between archaeology, ethnology and history. Such an attempt towards understanding is what I would seek in this fragment, which I have termed *From the Stone Age to the Motor Age*.

The Early Art of Northern Europe

a review

by A. VAYSON DE PRADENNE

1. KILBRIDE-JONES, 'The Evolution of Penannular Brooches with zoomorphic terminals in Great Britain and Ireland'. *Procs. Royal Irish Academy*, 1937, XLIII.
2. GUSTAF HALLSTRÖM, *Monumental Art of Northern Europe from the Stone Age*.
 1. The Norwegian Localities. Photogravure plates, text-figures, and atlas of 48 plates. Stockholm: Bokforlägs Aktiebolaget Thule, 1938. £3.
3. HERBERT KÜHN, *Die vorgeschichtliche Kunst Deutschlands*. Im Propyläen Verlag, Berlin. 612 pages, 200 text-illus. and numerous plates. Price not stated.
4. FREDERIK ADAMA VAN SCHELTEMA, *Die Kunst unserer vorzeit*. Bibliographisches Institut AG, Postschliessfach, no. 438, Leipzig C 1. 1936. RM. 4.80.
5. A. W. BRØGGER, 'Gullalder'. *Viking*, 1937, pp. 137-195, plates XVII-XXVI.

THE various publications here reviewed consist of works which are united by their subject-matter but they differ widely from each other in character and scope. The work of Mr Kilbride-Jones¹ is a monograph strictly confined to certain objects found in a certain part of Europe; that of Mr Hallström,² on the other hand, consists of what may be called a comprehensive monograph—that is to say, it brings together and relates several straightforward descriptions of a single subject (rock-art), but covers many different parts of a large archaeological region. Messrs Kühn³ and Adama van Scheltema⁴ have touched upon a vast subject—prehistoric and protohistoric art in Germany—so that their productions assume the form of text-books.

Mr Kilbride-Jones's monograph is devoted to ornamental objects of a type which he calls 'penannular brooches with zoomorphic terminals'; but he does not overlook the fact that the original type of the brooches in question has no representation of an animal, and that the name suggests a Teutonic zoomorphic decoration to which they are quite unrelated.

The author gives excellent illustrations of more than a hundred examples. Relying upon solid archaeological evidence, such as finds associated with well-dated objects (e.g., the Longfauh burial), and on a careful analysis of forms that illustrate the evolution, he concludes that, from a very simple original in the first century in England and Scotland, this type of brooch gave rise at the end of the second century to a 'northern developed form' which lasted in Scotland down to the fourth century and in Ireland to the eighth.

In this latter country the author distinguishes four groups, A, B, C, D,

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whose development he attempts to discover operating under the influence of a surviving La Tène art. In England and Wales occur instances of the 'northern developed form' as well as those of a smaller 'southern developed form'.

The publication brings to our notice ornaments some of which are little masterpieces of a very refined art, which could employ with a remarkable sense of proportion a decorative richness that recalls cloisonné-work. It brings to light an instance of artistic development—always an instructive thing—and is a good example of an archaeological method which is valuable when it is used, as here, within strictly confined limits of space and time and upon a large array of objects;—a method which, when relying mainly on typology, would be endangered by the phenomena of retardation and convergence.

Mr Brøgger⁵ deals with the period of Norwegian history during which the country was unified under a monarchical régime, that of Stiklestad. Archaeologically this period was known by rich burials, from the tomb of the queen of Oseberg, grandmother of Harald Hårfages, down to the Christian burial of Olaf Haraldson in Trondheim cathedral. The author draws upon the Skaldes poetry and the Sagas to show the political system of this period. A chapter called 'Storhauger og Kongshauger', names of huge barrows and royal barrows, is devoted to monuments of this type that have produced so much of the evidence. The illustrations represent some of the carved wood and above all the barrows themselves, which in a period of little local chieftains were of primary importance. The barrow was at one and the same time a 'motte' or raised point (*Hochsitz*) and burial-mound. Its range was from the seventh to the ninth century. After the establishment of the single kingdom of Norway by Harald Hårfages in the tenth century it lost its chief importance; for then the election of the king replaced the old allodial royalty, whose mark of privilege was the royal motte. The burial-mound of Haakon the Good at Seim in Nordhordland, dating from 961, was the last to be raised in Norway.

In his final chapter Mr Brøgger studies some aspects of the ancient culture as represented in the great poems of Rigstula, Håvamal and Voluspå.

The work of Mr Hallström forms the first part of a publication which we may expect to provide archaeologists with a practically complete documentation of Scandinavian rock-art.

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In his preface the author reminds us that the general plan of his work was drawn up in 1906. Since then he has carried out much field-work, watching his material grow all the time—38 sites in Norway instead of 8. No doubt he has drawn upon the work of his Norwegian colleagues, but his own is also the outcome of a direct personal knowledge of original sources. It is a book that meets a need, and which one is glad to possess—a monograph of the second order, but one achieving the same kind of accuracy and reliability as a detailed monograph and covering a large field. On such foundations general studies could be laid with both safety and ease. Mr Hallström must also be congratulated for making his results easily accessible by publishing them in a well known world language.

The plan chosen is the simplest and in our opinion the best. The author first sets down the facts one by one. Each chapter is a small monograph in itself, devoted to the study of a region, with detailed descriptions and reproductions of the works of art (rock-gravings) known there. Further, without waiting for the completion of the work, when he will state his opinions and general conclusions, the author gives an individual discussion of the essential characteristics of each site, comparisons with other material in the Nordic area, together with an account of archaeological discoveries made in the neighbourhood. This last item has, in a large and always rather thinly populated country, an importance that it would lack in denser regions where successive cultures are often to be found superposed.

The book contains 37 chapters and numerous illustrations which give one an excellent idea of the sites and rocks on which the documents illustrated are to be seen. For the study of these, each of the separate plates in the album gives the whole group of the figures as they are to be found on the rock itself. Thus the reader is provided with the best possible substitute for the original document, which often consists of large groups whose meaning, or unity even, can thus be considered ; for the whole design may be the work of more than one period.

These Scandinavian rock-sculptures, carved on ice-smoothed granite, form a long series dating from the Neolithic at least down to the Prehistoric and Roman Iron Age. It is impossible not to see in them a certain general resemblance, in spite of the greater or lesser degrees of stylization. The abundance of the evidence makes it possible in many instances to study variations of technique and differences of style, as well as superpositions ; thanks to this, therefore, one may hope to be able one day to discover the stages in the evolution of rock-art in

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the North European region. We shall not attempt here to anticipate the general synthesis which Mr Hallström will provide in his next volume.

The author often refers to the theory of two main groups consisting of groups in the Nordland and a South Scandinavian group, whose distribution-areas may overlap chronologically. The oldest Nordland pictures are remarkable for their naturalism, vigour, purity of line and size. The naturalism is always of a kind that strives so hard after neatness and simplification that it is plainly not far removed from conventionalism. The best known and most striking example is the single reindeer of Böla. The commonest subjects are reindeer, elk, water-fowl, whales, fish, etc., shown in profile and generally in stationary positions. At the end of the Stone Age and in the Bronze Age stylization is evident; one comes across outlines of the human figure, quadrupeds whose size decreases and whose legs reduced to two or four sticks tend to disappear altogether; the subjects are often found together in groups, as at Bogge. Behind a conventionalization that is puerile in character one can sometimes detect considerable accuracy in the observation of attitudes.

Representations of ships have a prominent place in the Bronze and Iron Ages. Mr Gjessing has already studied closely the chronology of the ship-pictures of Bardal, where they are numerous. Mr Hallström starts with a methodical examination of the documents of rock-art, comparing them when possible with pictures drawn on movable objects that can be dated archaeologically (such as the bronze razors); and his researches enable us to follow the course of artistic development in an unusually homogeneous region and also to study such elements of culture as navigation. One looks forward to the early completion of this admirable work, which follows in the best traditions of the great Scandinavian archaeologists.

It is no reflexion on the merits of these to say that the finesse at which they aim in the study of details, and which is in fact attained, would be illusory in most of the older regions of the world where cultural superpositions, juxtapositions and overlaps complicate the problem tremendously. It is all the more important, therefore, to be able to study the relatively straightforward stages of evolution in long stretches of time in these exceptional but fortunate regions.

‘Bookmaking is a profession’, said a naturalist, and it is one that Mr H. Kühn has thoroughly mastered. The work of the learned editor of IPEK portrays a judicious selection of evidence, a presentation of it

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which should be found satisfactory on grounds both of logic and of content, and a due proportion between the different parts of the book.

His work is built up round the framework of the classic chronological scheme, whose chief divisions are adopted : Palaeolithic (glacial epoch) which he dates 20000–8000 B.C. ; Mesolithic (8000–2000 B.C.) ; Neolithic (reduced to the short span of 2000–1600 B.C.) ; Bronze Age (1600–750 B.C.) ; Iron Age (750 B.C.–about A.D. 300) ; Folk-wandering Period (A.D. 300–800) ; Viking Age (A.D. 800–1050).

The standpoint adopted, with its limitation to Germany, is naturally rather troublesome, being at times too restricted and at others inconveniently large. The history of Art in any given country can only be understood in relation to the history of art in general. In each epoch there have been only a limited number of centres whose light radiated outwards to other lands. These centres occupied different places in the course of the ages. When one studies any particular country, such as Germany, from the point of view of art, one beholds a succession of reflections from different radiating centres, cast back from a region whose importance varies and is sometimes very slight.

Each form or manifestation of art has a beginning, culmination and decline ; so that, for exegesis as for a proper understanding of artistic phenomena, the best course would be to adopt a position in each of the great artistic centres in succession, and from these to trace its full development in time, noting the geographical limits of its influence.

But the modern point of view, in a world politically divided up into compartments, often has to be studied in accordance with those compartments. In such circumstances one is obliged to recover the old boundaries in each period—those of art as well as those of general culture and political power, for all these are more or less closely inter-related. Mr Kühn is therefore fully justified in opening his work by a historical summary explaining the origin and development of the Germanic world. The whole is a clear and well written account of the chief facts available. But it seems constrained to conform with the ideology of an existing system. That is unfortunate from a scientific point of view, for ‘ no man can serve two masters ’, especially when one of them is as exacting as scientific research. The author, after explaining how a small coastal zone on the shores of the Baltic and North Seas may be regarded as the Germanic cradle, thus summarizes his general ideas on the matter :—

‘ It is the fatherland of all the Germanic peoples who spread over Europe and later over the world ; first the Goths, Lombards, Vandals,

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Burgundians, Alemanni, Franks, Angles, Saxons ; then the English, Dutch, Germans, who occupied North America, South Africa, Australia, the South Seas, Eastern Asia. While the first regular migration of peoples scattered the Germanic populations over the whole of Europe and North Africa, the second, from A.D. 1500 onwards, covered the whole world.

‘The fatherland of all these folk is the little land on the shores of the North Sea and the Baltic’.

One anticipates that, when the main current of history is viewed from this angle, the history of Art itself may emerge in rather a peculiar form. One must admit, however, in his treatment of details, Mr Kühn holds fast to the most correct method in his use of archaeological evidence, and in his study of the distribution of types and of art influences. Many excellent sketch-maps and figures portray these in a visual form.

For the Palaeolithic period, owing to the very small number of important works of art found in Germany, the author strengthens his materials with very fine classic instances, borrowed from adjacent regions, particularly France. A very clear idea is obtained of the remarkable uniformity of Magdalenian art over a vast area, both as regards animal motifs and pure decoration.

In the Mesolithic these last only survive, and are more or less similar to the motifs of the preceding period ; the author emphasizes the great difference of mentality separating the peoples of the glacial and post-glacial epochs.

The chapter devoted to the Neolithic period deals chiefly with the decoration of pottery, while that on the Bronze Age is mainly concerned with the art of weapons, jewels and moulds. The accidents of discovery doubtless conduce to this kind of presentation. But one must not overlook the huge gaps in our knowledge about whole groups of objects ; and that this lacuna, while forcing us to compare unrelated factors, jeopardizes the conclusions drawn from such comparisons.

For the Neolithic, the author adopts a classification into culture-circles, based on pottery : the Kamm-keramisches Kreis (comb-ornament) and those of Michelsberg, the Bandkeramik, the Nordic, cord-ornament, and the Glockenbecker-Kreis (bell-beakers). This classification is of course very useful for the arrangement of museum-collections in a country where pottery-finds have been very abundant ; but what is its value from the general artistic point of view or that of the stage of culture reached and the inter-relations of the peoples who

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made these types of pottery? But this is not the place to criticize a classification by pottery, and in any case there is a convenient way of presenting the different artistic types.

For the Bronze Age Mr Kühn divides the area of which he has studied the artistic evolution into a Germanic, Celtic and Illyrian circle (Kreis), to which in the Iron Age are added the Roman and Syrian.

The Folk-wandering Period, which the author calls the second flowering-period of the Germans in prehistory—the first being the Bronze Age—has provided us with evidence of its art chiefly in rich and massive jewellery, brooches, and belt-buckles. His work contains an excellent selection, accompanied by a comparative series of foreign examples which brings out the remarkable influence of Chinese art in the matter of animal design—for instance, the grasshopper-motif whose symbolism was known, according to Chinese writers, in the first century B.C.

Last, a short chapter of five pages on the art of the Vikings enables the author to give some nice illustrations of the famous Oseberg ship, of the gold discs with interlacing ornament from Traen and Hindensee, and richly ornamented sword-pommels.

The book has a catalogue of illustrations with the bibliographic and museographic references concerned, as well as synoptic tables of the different periods and an alphabetic index. It is a valuable book of reference, easy to consult, in which one can find a selection of the best products of prehistoric art, not only from Germany but also from neighbouring countries. In short, a fine, useful book.

The work of M. F. Adama van Scheltema is described as 'the Germanic culture from the Stone Age to the early Middle Ages, as seen in the mirror of Art'. By his interpretations of the art the author has undertaken the task of reconstructing 'the history of the spirit' (Geistesgeschichte). His dominant idea (Kerngedanke) does not need, he says, to be argued at length; 'it does not need expanding in long-drawn-out theoretical disquisitions'. He starts out with the idea of a Nordic 'Kultur-organismus', whose development has to be followed through the ages in order that it may be comprehended. If one adopts the ordinary method of studying in succession the chief facts concerning the ancient peoples of the East and the Mediterranean and those of the West down to the Middle Ages and so on, declaring this to be the cultural history of humanity, it is then impossible, the author thinks, to explain the existence and development of the Nordic cultural organism.

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In the course of his work, Mr Adama van Scheltema further elaborates his ideas, in connection with illustrative art.

It is doubtless right to criticize a system of composing the history of civilization which consists merely in setting end-to-end the disjointed fragments of the history of the different peoples who have successively formed the vanguard of progress. But are not Mr van Scheltema's postulates open to danger? Does such a thing as a 'cultural organism' formed in the Stone Age, whether Germanic or Nordic, exist at all? Can the medley of tribes and peoples who have jostled each other for several millennia on the soil of the existing* Germany be regarded as a living psychological entity that has had an evolution of its own? One may doubt it; and if mistakes have often been made by imagining that a transplanted culture could wholly replace another, for there always remains something of the primitive substratum, is it not also a mistake to misconceive the capital importance of foreign influences which have sometimes caused actual ruptures in the cultural evolution of a people? The true answer is to be looked for, surely, in the lesson of history, a lesson that is reinforced by the findings of ethnology about the mutual reactions of cultures that are on different levels. Here once again one has reason to suspect that the author's views have been influenced by circumstances that hamper the scientific evaluation of facts.

This said, one must admit that Mr van Scheltema's book is full of interest. Without Mr Kühn's full treatment it contains nevertheless a good number of well reproduced documents† (68 plates). Its plan is rather different. He sets apart first all that concerns primitive times (Urzeit) and deals rather rapidly with the problems of representative art, bodily ornament and the ornamentation of objects during this epoch. Emerging then from this primitive world—so different from our own—of nomad hunters, and coming to the Neolithic, to the 'sedentary peasantry', the author reaches the beginnings of Antiquity (Vorzeit), from which actual conditions have developed by continuous evolution. From that point onwards he thinks we can really understand ourselves throughout the generations. Strange though the spirit of the reindeer-hunter be to us, yet it is easy to make contact with the spirit of Antiquity

* This review was written about the middle of 1939, since when the term has changed its connotation. We do not know how this change affects the 'nordic cultural organism' and the general line of the argument.—TRANSLATOR.

† The word 'document' is the same as the French word used in the original, and is retained here to describe an 'item of evidence'. A bronze axe, for instance, constitutes an archaeological 'document', equivalent to an original MS. in history.—TRANSLATOR.

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‘by way of the stable or across the threshold of the hut’. In consequence of this unity he proposes to deal with his subject under the categories of art, each being studied through different periods—the art of building, the drawing or painting, plastic and decorative art.

Mr van Scheltema is a philosophic soul; he likes not only general ideas but also the analysis of ideas, and enquiries into ultimate causes. He strives to interrelate facts and to explain them, particularly where he is dealing with transition, with the movement from one group of ideas to another. Thus the idea of decorating objects can be related to bodily ornament by the case of a mother ornamenting her child. These bright ideas and these attempts to interpret and explain are well calculated to interest educated folk whose curiosity about origins has been aroused, and who would like to have everything explained. They are intellectual concepts, nice and agreeable to meditate about. How far do they coincide with reality? The positive evidence available is too scanty to tell us. All philosophical concepts have an artificial, incomplete, disputable aspect; but that does not mean that one is obliged to condemn them.

Amongst the ideas developed by Mr van Scheltema we may cite the parallelism which he establishes between the artistic capabilities of the palaeolithic peoples and those of modern children. For an explanation of the hunters’ naturalism he looks not to a particularly keen power of observation but to the development of the highest intellectual functions. He does not agree with Verworn in thinking that children’s pictures are due to the need for reflection impressed upon them by education but to the fact that, when they begin to draw after reaching three years of age, they have passed, between their third and fourth year, the stage of self-consciousness (*die Bewusstseins-stufe der einzeitlichen Jägertums*). Here is an idea borrowed from Haeckel’s theory of recapitulation, and on the other hand that denial of the importance of environment which governs the author when he looks for an explanation of the origin of art in the country which he is studying.

The author notes that in the Iberian peninsula the transition from Quaternary (palaeolithic) to Neolithic and Metal Age art is marked by a conventionalization which charges the drawings with an intellectual factor that is wholly new; for forms are represented not as they are seen but as they are imagined. The author then compares the art of the Bronze Age in Liguria, Sweden, etc., with childish pictures, and then comes to the developed forms of Hallstatt art and to influences derived from the south. After a rapid description of the

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development of culture and art in the eastern Mediterranean region and of its influence on adjacent regions, he has some interesting, but unfortunately unexpanded, remarks to make about the transformation of classical art during its advance northwards; for instance, how relief ornament flattens progressively and finally becomes engraving. These he calls the 'assimilation' of foreign images, the 'nordic culture' rejecting certain 'indigestible' elements. This is a form of words that could also be used of a pupil receiving instruction from a teacher, or of the experience of existing primitive peoples influenced by contact with our civilization.

The section on decorative art is particularly well worked out. The author perceives a great difference, a gulf, separating the imaginative decorative art of primitive times, which pays no attention to the shape of the object, and the art of sedentary peasants which conforms and adapts itself to the object decorated. In point of fact one could find materials in quaternary art from which a bridge could be built across this gulf; the famous dagger-handle of Laugerie-Basse, for instance, where a reindeer is cleverly adapted to its function, or the spear-throwers of Breoniquel with their carvings along the axis of the round shaft and a horse's head at the hook-end, and so on. But Mr van Scheltema's treatment of neolithic art and its development is very attractive, particularly that which relates to pottery. The first style, that of Michelsberg and the megaliths, in which the pattern and background (*Muster und Grund*) are kept distinct, is succeeded by the second, those of the passage-graves of Scandinavia, of Bernburg and of the Kùgelamphorae, etc.; this is marked by an exuberance of decoration which makes him call it the 'neolithic baroque'. In Denmark a third style can be detected in which there is a break-up of the decorative uniformity that inter-related designs had given to the preceding style. Its place is taken by complicated motifs with a symbolic significance. As for the Bandkeramik, the many delicate problems which it raises are left undiscussed, and it is stated simply that it appears to have no links with Mesopotamia but on the contrary with South Russia, Central Asia and China.

The problem of Germanic animal-ornamentation (*Tierornamentik*) is also given careful consideration. Starting with copies of designs of southern origin, the author demonstrates that it finally abandons the realistic representation of animal-forms for purely decorative imaginary figures. Then these designs become interlaced and knotted and entangled until in the Viking age contacts with Byzantium in the east and with Mediterranean lands in the west oust the old Germanic

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conception of ornament, substituting the figure of an animal adapted to decorative purposes, and even compositions of a scenic character. The Oseberg style may perhaps be regarded as a kind of Viking baroque which was succeeded by that of Jellinge in which under Irish and Anglo-Saxon influence there appear distinct (*bestimmte*) animal-designs; the bird, the 'great animal', for instance, such as occurs at the end of the tenth century on the Jellinge stone, whose opposite face has the figure of Christ.

What becomes then of the old ideas of the Nordic peasantry, with the transcendental spiritual uplift of the Middle Ages, in a Christian fellowship wholly absorbed in a divine ideal? How were the survivals of the old decorative art united to designs imported from the east and south with those beliefs? In too short a space the author outlines some traits of this great problem. So too he tantalizes us by his brevity in dealing with survivals of the old art in popular art, which he treats so well. Let us hope that he will deal with it more fully in another publication.

As for the book under review, one must accord the author a full measure of praise on two grounds: for his penetrating analysis and for a degree of insight that comes only from a deep love of his subject, the 'inner light', also for a sincere, powerful and sustained attempt to understand and to interpret. Mr Adama van Scheltema doubtless does not always arrive at the truth, but who can boast of achieving such success as this? In any case he has produced a book that is brim-full of ideas, one that carries in it the germ of many potential discussions and that should therefore be fertile.

TRANSLATOR'S NOTE

Since the above translation was made we have heard with the greatest sorrow of the death of M. Vayson de Pradenne. At the time of his death M. Vayson de Pradenne had the original manuscript and the typescript of the translation which had been sent for his approval. The present version has, therefore, been set up from the uncorrected pencil manuscript of the translator; and several passages and quotations have had to be omitted. It is to be feared that there are still obscurities that M. de Pradenne might have been able to explain. The translation of a review of this kind is rather difficult; for the subject is an abstract one, nor has the translator read the books.

M. Vayson de Pradenne will be missed by his many friends, not least by the readers of ANTIQUITY, to which he had contributed from the first volume.

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A FORGOTTEN EXPLORATION OF THE WESTERN ISLES

Demetrius, the grammarian of Tarsus, has already attracted some little attention in the history of Roman Britain, in that Plutarch¹ mentions him as passing through Delphi on his return from Britain, shortly before A.D. 83-4,² and taking part in a discourse upon the decay of oracles. Two modern critics, King and Dessau, have also observed³ that this Demetrius seems to have left a record of his presence at York on a bronze dedication⁴ to Ocean and Thetis and to the gods of the legate's palace. Haverfield, astutely noting⁵ but not endorsing their conclusion, remarks that his presence in Britain is of interest in connexion with Agricola's educational programme. All these critics, too, recall that he made an exploration under Imperial escort: but none mentions his experiences in detail, and the eighteenth chapter of the dialogue *de defectu oraculorum*, which narrates them, seems worth translating in full.

His story runs as follows, reported by Plutarch:—'Among the islands round Britain were many deserted and scattered ones, some of which were called after heroes and spirits. He himself had sailed, on inquiry and exploration under Imperial escort, to the island nearest the deserted ones, which itself had few inhabitants, all being held sacred and inviolate by the Britons. Soon after his arrival there occurred a great confusion in the air, with many heavenly portents; squalls got up, and there were whirlwinds with lightning. When these subsided the islanders said that some great one had passed away. As when a light is lit, it shines and does no harm, while its removal inconveniences many, so great souls shine with calm and guileless light, while their extinction and destruction sometimes, as in this case, cause hurricanes and rain-storms, and sometimes charge the air with pestilences. Certainly there was one island out there where Saturn lay in

¹ *De defectu oraculorum*, c. 18=*Moralia*, 410, 38.

² For the date, the Games-presidency of Callistratus, see Pomtow, in Pauly-Wissowa, *Realencyclopädie*, s.v. *Delphoi*, 2601.

³ King, *Arch. Journ.*, xxxix, 23; Dessau, *Hermes*, xlvi, 156-60.

⁴ CIL vii, p. 62; cf. E.E. ix, p. 560, for Haverfield's comment.

⁵ *Romanisation of Roman Britain*, 4th edn., p. 34; cf. Tacitus *Agr.* 21, 2. Plutarch, however, does not specifically state what Demetrius had been doing in Britain.

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captive sleep, watched by Briareus of the Hundred Arms : sleep had been invented to enchain him, and round him lay many spirits, attendants and ministers '.

Some curious points emerge from this solitary page from a forgotten explorer's log. Historically, it is an exceedingly interesting sidelight upon Agricola's activity in exploration, a year or two before his fleet rounded Cape Wrath. Voyages like this not only paved the way for Roman conquest, but must have formed the basis of that geographical knowledge displayed in Ptolemy's account⁶ of Britain's coasts and in the *Ravenna List*. For although Ptolemy's treatment⁷ of the western isles is sketchy and perfunctory, the latter source preserves⁸ a remarkably detailed list of islands. Indeed, the impression of detail which the *List* conveys is not the only point of agreement with Demetrius: the name *Minerv(a)e*, attached⁹ to an island, shows that one of these at least was dedicated to a goddess equated with Minerva like the Celtic *Sul* at Bath. Other names¹⁰ in the *List*, like *Anas* and *Atina*, 'Drake' and 'Duck' islands, might seem to indicate a playfulness in nomenclature among the Roman explorers, not unknown in other ages. *Grandena*,¹¹ however, is so near to *grandinea*—'full of hail', that one is tempted to wonder whether the name covers an experience like that here described.

Socially, too, the story has its interest. It gives us a rare glimpse into the methods of Imperial exploration, using educated and inquisitive Greeks for its intelligence-officers. Demetrius not only cross-questioned the natives but induced them to talk about their native folk-lore. What would we not give for the rest of his note-books ! It is not the purpose of this note to examine this side of the narrative, though it is hoped that it may stimulate those better acquainted with Celtic lore to contribute to the discussion. Three points, however, may be observed where there is close correspondence with the testimony of Demetrius. The idea that the islands are holy has not utterly disappeared: for a small group of islets off Lewis is still called the Shiant or 'Charmed' Isles, guarded by the storm-kelpies known as *fear gorma*, the Blue Men of the Minch. Secondly, there is still a widespread belief in the western isles that the Spirit-multitude (*shuagh*)

⁶ *Geographia*, II, 3, 1-6.

⁷ *op. cit.*, II, 2, 11.

⁸ *Ravennatis Cosmographia*, ed. Parthey and Pinder, v. 32, pp. 440-41.

⁹ *op. cit.* p. 440, 17. ¹⁰ *op. cit.* p. 441, 11 and 13. ¹¹ *op. cit.* p. 441, 17.

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travel in eddies of wind. A third point of contact is much older. The attitude taken by the islanders with whom Demetrius talked towards the spirits and their manifestations, and their philosophical explanation of the change, find some curious echoes in the *Mabinogion*. In the tale of Taliesin, the poem on the fate of Maelgwn Gwynedd describes the arrival of the Yellow Fever as a spirit: 'Great God! how the sea whitens, When first it comes! Great are its gusts when it comes from the south! . . . it will not suffer for its doings, Seeing it is blameless'. The correspondence is not, of course, precise. But the poem, though nominally Christian, is more than half-pagan, like much Dark-Age thought; and its sentiments manifestly belong to the same world as that so sympathetically recorded by Demetrius.

I. A. RICHMOND.

IRANIAN TIN

The subject of natural tin-deposits in Iran has already been referred to in *ANTIQUITY* (1938, XII, 79-81). We revert again to it because it has an important, if not decisive, bearing upon the origins of metallurgy itself, and because it is a question of fact that is capable of solution by any observant traveller. If this note should be read by anyone who visits the region in question, we ask him to keep an eye open for old mine-workings and slag-heaps, and if possible to put in his pocket a piece of the ore, however small. Such a specimen, in expert hands, might solve a long-standing problem of archaeology. Moreover, it seems not unlikely that this region may be in the news again before long.

Since the previous note was published we have been able to read an article published in 1895 in the rather inaccessible *Transactions of the Institution of Mining and Metallurgy of London* (vol. III, 2-39). It is by James Mactear and consists of notes on Persian mining and metallurgy, based upon a journey in Persia undertaken by the author in 1893. The most interesting part of this article concerns the alleged tin-mines of Angert; but the information given is not that of Mactear himself, who did not go there, but of previous prospectors, whose report* Mactear quotes in full. It appears that in 1837 Sir Henry Bethune erected some iron-works 'about 60 miles northeast of Tabriz, for the purpose of smelting a magnetic iron ore which is found in

* It is not evident whether this Report was ever published, no reference being given; Mactear simply states (p. 3) that it was sent by Dr Riach 'to Lord Palmerstone in 1837'.

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immense quantity near the village of Juwan. These mines were visited by Dr Riach. . . .', who also reported as follows :—

' Leaving the establishment of Lindsayabad, we travelled up the little stream of Anngert, and after marching three-quarters of an hour, up-hill a good way, and leaving the stream on its left bank, we came to perhaps the most wonderful mine of tin in the world. I call it a tin mine because Mr Robertson (superintendent of the works here) and Rowe (one of the foundry establishment), who is an experienced miner, and has been brought up at the Cornish mines, both call it so.

' On the right hand of a narrow ravine, and about 100 feet from its lowest level, we saw perhaps 400 or 500 tons of stones collected and ready to be transported. This had recently been quarried close to the spot from an extensive mass of rock, which projects beyond the general level of the hill, and from between hard grey granite rocks.

' This enormous mass is about 130 to 150 feet wide ; it extends up-hill (still on right side of the ravine) to the top for a mile at least. In this direction it has not been traced further, merely from an impression that there is here enough of ore for any lifetime.

' It descends also to the bottom of the ravine, still on the surface, and here becoming much intermixed with masses of very rich copper ore, it is seen ascending the opposite side. What depth into the bowels of the earth this mass may penetrate is unknown, but the experienced people just alluded to assure me that all this is tin ore of an extremely rich and excellent quality. It is a greyish stone, heavy, and almost every piece examined has numerous brownish-coloured crystals in it, which are said to be quite characteristic of the metal.

' I am assured that a vein of tin ore in Cornwall of only 6 inches thick, and worked at from 100 to 200 yards deep by the expensive process of boring, etc., and with the aid of steam engines, etc., is reckoned well worth working ; while here thousands of thousands of tons can be quarried as any common rock would be, and the roads are such that there is no difficulty in having the ore carried on horses or other cattle to any place for smelting.

' It was not before known that tin existed here till Mr Robson [Robertson ?] made the discovery ; and if this quarry be so rich as it is said to be, it is quite evident that there is enough of this metal in Karadagh to supply the world ; for other mines of the same stone have been discovered of perhaps as great an extent as that just described, and even richer in metal, but they are more difficult of access '.

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From a perusal of the above I came independently to much the same conclusions as a certain Mr J. H. Collins, who took part in the discussion following Mactear's paper, namely that it was 'quite evident that Dr Riach did not know much about tin, and I doubt whether Mr Rowe knew much about it either, though he was a Cornishman. I think', he added with some justification, 'it would be very hard to get anybody to believe that such a deposit as this is described to be, and found so long ago as 1837, has remained untouched for more than half a century'.

Dr Riach's report was throughout decidedly optimistic in tone, and one wonders whether his optimism was in any way stimulated by hopes of future employment. However that may be, the presence of natural tin deposits near Angert must not be accepted until it is supported by independent and less suspect testimony.

Mactear reported the presence of 'immense excavations or open cast workings still to be seen' in the regions he traversed, evidence of an enormous amount of ancient mining. The presence of copper, lead and gold is well established.

A NATIONAL ATLAS

A proposal has recently been made to compile and publish a National Atlas of Great Britain and Northern Ireland. The scheme is described in the Report of a Committee of the British Association for the Advancement of Science (Report no. 2, January 1940, pp. 361-8). It was also the subject of a full and lively discussion at a recent afternoon meeting of the Royal Geographical Society (*Geographical Journal*, February 1940, pp. 96-108). Bright ideas originate usually from individuals, not from committees; and the old hand's first reaction to such a scheme is to ask, Who is behind it? A shrewd guess would fix the responsibility upon Professor E. G. R. Taylor; another would, in this case, put its chances of realization high. Such a project needs driving-power, enthusiasm and knowledge; and an expenditure of national funds that is, by any rational standards, infinitesimal. Any further considerations of its chances would lead us astray.

We accept, for the purposes of this notice, the premises that such an Atlas is desirable at the present time. With two provisos one would, if compelled to answer 'yes' or 'no', most decidedly say 'yes'. Those two provisos are (1) that the Atlas should cover the whole, not merely a part, of the British Isles and (2) that a permanent organization should be established, with endowments, or a call on state funds,

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for keeping it up to date ; otherwise the atlas will merely standardize such errors as are inevitable in all first editions. New editions of these maps are as necessary, in their sphere, as new editions of the Ordnance Maps ; nor would any written lists of addenda and corrigenda meet the case in either instance.

The necessity of including the whole of the island of Ireland should be so obvious as to need no argument ; particularly to geographers. If practical difficulties are insuperable, then so much the worse for those who create them. After all, one of the most interesting features of Irish history lies in the mutual and varying relations between North and South ; the corresponding maps of England would hardly be intelligible if Kent, Surrey and Sussex were omitted merely for political reasons.

We therefore, with these qualifications, definitely support the project ; and such criticisms as we make must be read in that light.

In many ways the project might be criticized as premature because the preliminary surveys had not yet been made. A similar criticism might have been said of the attempts to produce a map of Great Britain before the surveys of General Roy and the early Ordnance Surveyors made possible the production of an accurate map of the island. There is, however, a difference—the early maps before the Ordnance were the best that could be produced at the time. The science of survey, and the instruments, had to be made and developed ; as soon as they were, they were utilized. But for some of the maps proposed for the Atlas, the soil-map for instance, the scientific skill and the human agents for carrying out the preliminary survey do exist, but the surveys do not. Surely the proper course would be to carry out a soil survey of the whole country first, publish it on an adequately large scale, and *then*, but not before, incorporate generalized soil-maps in the Atlas ?

Similarly with megaliths. Any atlas-map of megalithic monuments published now would be full of inaccuracies, and would certainly not, in the words of the Committee, ‘ mark a great step forward in the dissemination of accurate knowledge ’. A survey of megaliths is being carried out by the Ordnance Survey—slowly because resources in men and money are limited, but as carefully and thoroughly as possible. Until this survey is complete any small-scale generalized atlas-map must be misleading. Indeed this principle is conceded by the Committee whose report says the Atlas is to ‘ present the results of the various Surveys, returns and censuses made by Government Departments ’.

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Valuable as such an Atlas will eventually be, the present need is rather to push on with the preliminary surveys. For the backwardness of these the responsibility must be placed upon the Government ; the skilled labourers and the harvest are both present. How many people realize that the most fundamental of these surveys—the geological—is still incomplete ? There are still no official geological maps of the Outer Hebrides, including of course the large and geologically important island of Lewis. And of course the drift-maps are also terribly behind the times. But it is not the fault of the Geological Survey.

There is another practical difficulty in the publication—the premature publication we think—of Atlas-maps when no comprehensive surveys are available—that of classification. Until the units concerned (whether megaliths or anything else) have been surveyed, vetted and compared, classification must be based largely on unverified assumptions. That was the disease which attacked a previous British Association Committee (on megaliths). When that Committee was formed—one of the veteran pioneer students of megaliths, A. L. Lewis, was present at the first meeting—the members all sat round a table and proceeded to draw up an elaborate classification, into which their as yet unvisited specimens were to be authoritatively forced. One member, being young and iconoclastic, suggested that they were putting the cart before the horse, that we had still to learn a lot more about the associations of, e.g., cists and ‘dolmens’, before we could classify them, and even ventured to cast aspersions on the pure nature of the ‘dolmen’. To do so in such orthodox company was of course to show a reprehensible scepticism ; and the game of classification went merrily on. So this member played the slower but surer game of go-look-see ; and the tortoise is winning, its competitor having recently expired after a few convulsive kicks.

The Committee calls attention to the use of such an Atlas to ‘administrators, public men’, and others. Agreed, but only if they know how to use it ; and we doubt whether they do. How can they when they are not taught to at their schools and universities ? Until their education is reformed—and there are no signs of that on the horizon—such an Atlas will be as useless in their hands as knives and forks to a dog.

Of the historical maps it may be said that certain omissions should be rectified, but cannot be, again because the necessary research has not been done. Such are maps showing the extent of medieval Royal Forests (as perambulated 1298–1300, and before then), a Viking map,

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a map showing medieval Honours and Castles (classified), Parks (based on Parliamentary Surveys).

The proposal, boldly envisaged and bravely initiated, might rank with the D.N.B., the O.E.D. and the English Place-name Survey ; but all these three were carried out by a permanent organization created for the purpose. The first was financed privately, the second from Oxford, and the third is financed by a voluntary society. These sources are unlikely to be available for the Atlas, nor should it be left to them ; for it is essentially an undertaking of national scope, for which a nation that can find six million pounds a day for warfare cannot possibly plead inability.

Finally, as a constructive criticism, we would put forward the following. Organize a permanent nucleus, possibly at the Ordnance Survey, endow it with a proper, adequately paid permanent staff, who can initiate or continue the essential preliminary surveys, and keep such maps as are published up-to-date (by publishing revised editions, based on card-indexes). The Ordnance Survey, as was remarked in the discussion referred to above, is an obvious headquarters, for it is the headquarters of the national cartographical survey, and it has a long-established traditional liaison with historical and archaeological work. It has also an archaeological department which has already done pioneer work on just such surveys. Of course the mapping of modern distributions (census results, economic facts, etc.) requires a special technique, which has to be invented or improved ; but here at any rate the facts have been surveyed, and the work thereby greatly lightened. There again the Ordnance Survey has experience (witness the population-map published there). A permanent *experimenting* unit of this kind would be a national asset.

We wish the project success ; but we wonder whether our friends the geographers, skimming lightly over the surface of the land, realize what a fearsome programme they have drawn up for themselves, and others.

O.G.S.C.

VIKING WEAPONS FOUND NEAR BEARDMORE, ONTARIO*

We are indebted to Dr C. T. Currelly, Director of the Royal Ontario Museum of Archaeology, for the following copy of a note by him published in the *Canadian Historical Review* and for the illustration he allows us to reproduce (PLATE I).

* Reference to this find was printed in ANTIQUITY 1938, XII, 232-3.

PLATE I



VIKING WEAPONS FOUND NEAR BEARDMORE, ONTARIO
(see p. 200)

PLATE II



VOU NOUS TOMB 84, Nos. 29, 30
CLOGGLED PINS (full size)
(see p. 204)



VOU NOUS TOMB 84, No. 29
DETAIL OF PIERCING
(Magnified by 2.5)



VOU NOUS TOMB 84, No. 30
DETAIL OF PIERCING
(Magnified by 2.5)

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'On 24 May, 1930, Mr James Edward Dodd of Port Arthur, a railroad man who spends all his spare time in prospecting, was sampling an exposed, nearly vertical, quartz vein near Beardmore, about seven miles from Lake Nipigon, in northern Ontario. At the point where the vein ran into the earth, there was a clump of white birch, consisting of an old tree that had died and a group of young trees sprung from the roots. Birch is a very hard wood, and to cut through such a mass of tangled roots promised to be a serious undertaking. Consequently Mr Dodd put in a considerable charge of dynamite and blew over the whole tangled clump. The big mass went over all together, and the rock which lay about three and a half feet below the surface was exposed. Lying on the rock were some pieces of iron. Mr Dodd threw these out and went on with his work.

'A few days later, a well-known man of the district, Mr William Feltham, happened to visit Mr Dodd's camp, and the two men discussed what these curious iron objects might be, and the meaning of the depth at which they had been found, and of the great mass of trees over them.

'A little later, Mr Dodd took the things to Port Arthur and showed them to Mr Aaron Lougheed. A few days after that, Mr John Jacob, of the game and fisheries service of the province of Ontario, and a brother of the late Fred Jacob who was well known in Canadian journalism, came into Port Arthur and called on Mr Lougheed. Mr Jacob has been for a number of years in touch with the Royal Ontario Museum of Zoology and is an extremely accurate observer of birds. Mr Lougheed told him of the extraordinary iron that had been found and took him to Mr Dodd's home to see it. It consisted of a sword broken in two, a very peculiar form of axe, and a bar, all of them quite seriously rusted. Mr. Dodd had no opinion as to what the objects might be, but told of the finding. After examining them very carefully, Mr Lougheed and Mr Jacob went to the public library, where they came to the conclusion that they were Viking weapons. Mr Jacob then sent word to the Museum, but this was done by word of mouth and the message never reached me.

'The things lay around Mr Dodd's house for some years and were offered for sale at a small price. Then they were thrown out into the back yard, but later Mr Dodd took them back into the house and made another effort to sell them.

'Some time later, Mr Dodd mentioned the matter to Dr E. M. Burwash, a geologist in the employ of the Ontario government, who sent

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me word that there was a Viking sword in Port Arthur. I wrote about it but received no answer, and the whole thing seemed so utterly impossible that I did not go to Port Arthur to follow it up. Later, Mr O. C. Elliott, of the Collegiate Institute in Kingston, Ontario, saw the things and made an extremely good drawing. This he sent to me, together with an excellent description of the objects. I saw at once that they were without doubt Viking, and immediately wrote to Mr Dodd, who brought them down to the Museum.

'It was obvious to me that the weapons were a set—that is, that the axe and the sword were of the same date, which I judged to be about A.D. 1000. I asked Mr Dodd if he had found anything else, as I knew that there should have been another piece. He said 'yes'—that lying over the bar of metal was something like a bowl that was rusted into little fragments. He had just shovelled them out. This bit of evidence was as it should have been, and since no one unacquainted with Viking things would have known of this iron boss that covered the hand on the Viking shield, I felt, therefore, that there was no question that these things had been found as was described. In addition to this, there was the fact that the pieces formed a set. Although I am told that a fair number of sets have been found in Scandinavia, I had never seen a set in any of the Viking finds made in England, where odd swords and odd axes are occasionally discovered. I know of no case in England of the axe and the sword being found together. As suspicion of nearly everything has to go with all archaeological work, I had been suspicious as to whether the weapons had been brought from Norway or Denmark, and the Beardmore locality given to them in recent times; but the story as I have just told it dispelled this suspicion. I consequently bought the things for the Royal Ontario Museum of Archaeology.

'Shortly afterwards, Mr Jacob called and gave me a written statement as to his and Mr Loughheed's part in the matter. He said that on first seeing the articles, they had seemed to him important enough to warrant his going and checking a statement or two of Mr Dodd's and that he accordingly went to the spot and saw that the clump of trees had been recently turned over, and that on the rock there was a picture of the sword in iron-rust, just as it had been lying. He hunted for any impression of the axe on the rock, but evidently a little dirt had been between the axe and the rock and there was no staining from the axe. Later still, I received a written statement from Mr Feltham, who had seen the things lying on the edge of the trench.

'Professor T. F. McIlwraith, of the staff of the Royal Ontario

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Museum, went up to Beardmore as soon as possible, and Mr Dodd took him to the site. After some hunting, a scrap of metal was found where the earth was first thrown out. This could very well be a part of the boss of the shield, and later another small scrap was found, which also could be from the thicker edge of the boss.

'The weapons were treated by an electrical process as soon as we acquired them. This drives off the oxygen and so arrests rusting. Photographs of them were sent to a number of well-known Norse archaeologists, who agreed that the sword and axe could well be of the same period, and that from 900 to 1000 would be a general statement of date. Dr Matthias Thordarson, director of the National Museum of Iceland, illustrates a similar sword and axe in the *Vinland Voyages* and dates them 1000.

'While we were getting ready to publish a statement, an article appeared in a Winnipeg paper, from a man who had heard the story in Port Arthur. Then came a statement to a reporter claiming that Mr Dodd had not found the weapons as he had described, but that they had been found by him in a house that he had rented, in which they had been left by the owner of the house, a Norwegian. Immediately investigations were made in Port Arthur, and it was found that Mr Dodd had not moved into that house for eighteen months after the time he had been showing the weapons to various people. Eventually the man who had told this story to the reporter said that he had meant it only as a joke, and signed a statement that he had never seen the things.

'Now we are met with the seemingly incredible fact that a Viking was buried near Lake Nipigon. The Indian habit of sharing articles of value makes it inconceivable that three such unusual objects would have remained together if traded from tribe to tribe either from James Bay or the Labrador shore. The idea has always been that the Viking visits, as described in the sagas, were to the Atlantic coast of America, and there have been published many papers discussing which part of the coast was reached. It does not seem to have occurred to anyone that the Vikings may have come into Hudson Bay and down to James Bay, and from there southward and westward to Lake Superior, as this find suggests. There is a well-known Indian trade route from James Bay to Lake Nipigon. From there the most obvious route to Lake Superior is down the Nipigon River. An alternative way is up the Blackwater River to Lake Nakina, from which a portage leads to the headwaters of a stream flowing southward to Lake Superior. The

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Blackwater makes a tremendous loop eastward, and about seventy miles of river and rapids can be avoided by portaging from a spot a few miles above the mouth of the river to Lake Nakino, by way of a small unnamed lake. The Viking weapons were found close to this short cut'.

TOGGLE PINS IN CYPRUS (PLATE II)

The two 'toggle' pins published in this note were found in Tomb 84 on site A at Vounous, a necropolis on the north coast of Cyprus, in the spring of 1937.

The grave contained the remains of two bodies; one occupied the centre of the chamber, lying parallel to the door: the pins were in position, one on each shoulder, with the points upward towards the head. No further data could be gathered as the tomb had suffered severely from hydraulic action. The second body had been placed to the left of the stomion. Both corpses were contracted in the usual early attitude.

It is impossible to separate the pottery on stylistic grounds, and as most of it was in a single state of preservation it would be reasonable to attribute the whole group to one burial, that in the centre. The second body may have been a primary burial, or possibly contemporary with the first.

The pottery lacks any pieces distinctive of E.C. 1b, but certain features link the group with tomb 82A, which is probably to be placed late in E.C. 1a or early in 1b. This would indicate a relative position late in 1a, but rather earlier than tomb 82A.

In the light of tomb 164B, from the same site, it is possible to fix an approximate period for the change from E.C. 1c to 11a. Prof. Albright has suggested in a letter to the writer that the absolute date of this grave should be given a lower limit of 2500 B.C. rather than the date in the 27th century proposed in *Palestine Exploration Quarterly*, July 1939. In view of the mainland evidence on which this alteration is based, it seems safe to accept this lower limit. A consideration of the ceramic development and the number of graves on site A would indicate a minimum date of the late 28th to the early 27th century B.C. (with a mean of 2700 B.C., but it is not impossible that the average should be raised in connexion with any alteration of the minimum date of tomb 164B) for E.C. 1a, so that tomb 84 could be placed in the early 27th century.

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Tomb 84, no. 29. 'Toggle' pin; nail shaped with a convex button head. Lightly engraved decoration above and below the piercing. A single strand wire appears to have been inserted through each side of the piercing and twisted, thus giving two independent threads looped through the piercing. Length 14.3 cms. (PLATE II).

Tomb 84, no. 30. Details as no. 29. A single wire has been inserted through the piercing and then twisted and wound at least once round the shaft below the piercing. Length 14.35 cms. In each case the piercing has been cast with the pin. (PLATE II).

Evidently one type of Early Cypriot garment consisted of a cloak fastened on each shoulder with a pin: at Vounous three other bodies were so clad, two of them with the pins in the same inverted position.

These two pins, unique at Vounous, belong to Madame Henschel-Simon's¹ group 1, 'Nail with semi-globular head' type. This class of toggle is interesting both chronologically and geographically, but it is possible that once again a metal type has been invested with undue significance. Madame Henschel-Simon records specimens from Megiddo,² Hammam,² Troy² and Cyprus;² to her figure 7 could be added the pins which she illustrates from Byblos,³ Agha Evlar⁴ in the Talysh, and Tepe Gawra,⁵ while a specimen from Chagar Bazar appears to belong to the same group, together with a fragment from Alişar and pins from Tell'As, Ras Shamra, and further examples from Byblos and Cyprus.

The two Megiddo pins⁶ come from Tomb 1014B, dated by Madame Henschel-Simon to the transition between E.B. and M.B., but by the excavators to M.B. I; on Albright's chronology⁷ this would give a date between the 21st and 19th centuries B.C. Wright⁸ would place the tomb in the earliest group of M.B. I remains, roughly about the

¹ *Quarterly of the Dept. of Antiquities in Palestine*, 1936-7, vol. VI, 173.

² *Ibid.* p. 181, fig. 7. ³ *Ibid.* p. 177, fig. 5b.

⁴ *Ibid.* p. 178, fig. 6e. ⁵ *Ibid.* p. 183, fig. 8.

⁶ Engberg and Shipton, 'Notes on the Chalcolithic and Early Bronze Age Pottery of Megiddo', p. 76, fig. 20 A, B. Guy and Engberg, 'Megiddo Tombs', p. 169, nos. 2 and 3; plate 102, nos. 9 and 10. But the best illustration is that used by Madame Henschel-Simon, cf. *D.A.P.* VI, pl. LXVII, no. 1.

⁷ *Annual of the American Schools of Oriental Research*, XIII, p. 98; corrected in the text to include I and H only.

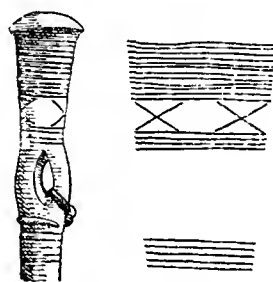
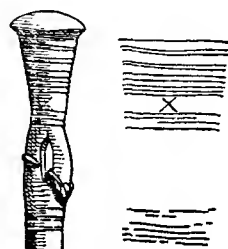
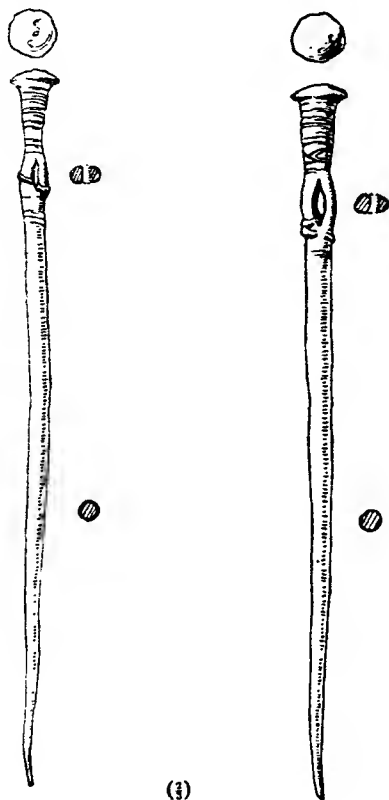
⁸ *Bulletin of the American Schools of Oriental Research*, no. 71, p. 32.

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21st century ; Madame Henschel-Simon's absolute date of about 2000 B.C. cannot be far wrong.

The single example in the Byblos deposit⁹ can be placed in the 19th century B.C. according to Albright.¹⁰

The Hammam¹¹ pin is loosely dated to the beginning of the middle bronze age, and should therefore fall within the general limits of the Megiddo and Byblos specimens.



As Madame Henschel-Simon points out¹², this chronological homogeneity is disturbed by the occurrence of the type at Tepe Gawra ; Speiser¹³ gives the statistics as 3 in Gawra VII, 19 in VI, 2 in V, 2 in IV and 1 in III, yielding an approximate chronological range from the turn of the 4th millennium to the middle of the second, a span of some 1500

⁹ *Byblos et L'Egypte*, p. 123, pl. LXIX. But the type is commoner than Madame Simon supposes :—*Syria*, x, pl. xxxvii ; Dunand, 'Fouilles de Byblos,' pl. LXIX and civ.

¹⁰ *AASOR*. xvii, p. 25.

¹¹ *Liverpool Annals of Archaeology*, vi, 87 ff, pl. xxi.

¹² *Q.D.A.P.* vi, p. 183.

¹³ *Excavations at Tepe Gawra*, I, 114.

years; the period of maximum popularity would then lie between 3000 and 2500 B.C., half a millennium earlier than the Megiddo specimens. Speiser's date receives confirmation from a pin from Chagar Bazar,¹⁴ site B.D. level 3, dated by Mallowan between 2900 and 2500 B.C.

The Trojan¹⁵ toggle has been attributed to Troy II-V on account of its supposed Cypriot analogies; such a wide period ending in the 19th century B.C.¹⁶ cannot be far wrong, but the evidence is subject to confirmation from Prof. Blegen's recent excavations.

The fragment from Alişar¹⁷ is attributed to stratum I but Von der Osten's subsequent remarks¹⁸ nullify its value; no precisely similar type seems to have been recorded for the period of the Hittite Empire, as D 44¹⁹ appears to have a swollen head. In any case the loose attribution employed prevents any usefully precise knowledge of the occurrences of Toggle types at Alişar.

Syria, 1932, vol. XIII, pl. xxxix illustrates what is apparently a pin of this class, from Tomb I at Tell'As. Du Buisson (*Syria*, XIII, 187) dates this group to the first half of the second millennium, but Albright (*AASOR*, XIII, pl. 67, par. 13) followed by Wright (*BASOR*, no. 71, p. 33) raises this to between the 24th and 20th centuries B.C. If the upper limit be accepted this specimen fills the gap between Gawra VI, Chagar Bazar and Megiddo, in the geographical and chronological distribution of Type I.

Hančar²⁰ has proposed a late date for the Caucasian and Talysh²¹ forms, as late as the end of the second millennium B.C.; Madame Henschel-Simon²² reacts against this and is inclined to raise the date. Apart from the slight but markedly noticeable morphological differences, if Hančar is correct in deriving the 'Cyprische Locknadel' from the south, the late survival of the type I class at Tepe Gawra provides a chronological link. In any case the obscurity of Caucasian chronology reduces the importance of the Agha Evlar pin.

Since the earliest examples antedate 2500 B.C. in Assyria and on the Habur, it seems likely that this form of toggle spread southwest, reaching

¹⁴ *Iraq*, IV, 132, no. 5, fig. 12, no. 5.

¹⁵ Schmidt: *Schliemanns Sammlung*, no. 6411, p. 254. Dörpfeld: 'Troja und Ilion', I, p. 357, fig. 295. ¹⁶ *American Journal of Archaeology*, 1934, p. 230.

¹⁷ *The Alishar Hüyük*; seasons of 1928 and 1929, I, p. 60, fig. 69, no. b512.

¹⁸ *Megiddo Tombs*, p. 169.

¹⁹ *The Alishar Hüyük*; seasons of 1930-32, II, 258, fig. 283.

²⁰ *Eurasia Septentrionalis*, VII, 113 ff.

²¹ Also illustrated by Hubert, *Syria*, VI, 24, fig. 7. ²² *Q.D.A.P.* VI, 180.

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Megiddo by 2000 B.C., but continuing in use at Byblos until the 19th century B.C. and in north Syria until the same general period, for it occurs at Ras Shamra in Niveau II (*Syria*, xvii, p. 133, fig. 19 F). Northward it may be that the Talysh pins and the Alişar example are derived from late Assyrian prototypes.

One independent area has not been examined—Cyprus. Vrysi tou Baba Tomb 313A, no. 115²³ included a toggle of type 1. Sjoqvist has dated the deposit to the middle of E.C. III, 1c, IIb. Cypriot chronology is relative rather than absolute, but a date in the 23rd century B.C. would not be far wrong; yet this pin is antedated by the two Vounous specimens by four to five centuries, so it is necessary to admit that in Cyprus, as in Mesopotamia, the form had a long currency. An imported pot of E.C. 1c²⁴ date which Prof. Albright has suggested to the writer is Phoenician rather than Palestinian, points to a source of contact with the areas using this toggle type; it is probably the chance of excavation that examples have not been recorded in an earlier context at Byblos and other Syrian coastal sites. Nevertheless these examples must share with the Gawra and Chagar Bazar pieces the chronological primacy in type.

A slight variant of the type is Cesnola Collection no. 4680:²⁵ Myres indicates a date before late Cypriot, but it would seem that the low centre of piercing may indicate a middle Cypriot date—both the Vounous and Vrysi tou Baba specimens are pierced relatively high up the shaft; the date is confirmed by the apparent occurrence of the type at Vrysi tou Baba in tombs 8 (uncertain date, 15 (M.C. II), 47 (M.C. IIa) and 50 (M.C. IIb) excavated by Prof. Myres and Mr Markides before the first German war. Perhaps with this class go *Ath. Mitt.* xi, beil 1, no. 15, from Levkosia (Nicosia) and therefore presumably from Ay. Paraskevi: however this piece may be coupled with Vrysi tou Baba tomb 35 (Cyprus Museum negative G 635), to stand between type 1 or its modifications and the mushroom-head toggle, so common in Middle Cypriot times (Tomb 35 would appear to date to M.C. II).

The pins from Vrysi tou Baba tomb 318²⁶ are apparently examples of class 1 with a slightly modified head. It is not certain that they should be dated to E.C. II²⁷ as they very possibly belong to the later burials.

²³ *Swedish Cyprus Expedition*, I, p. 93, pl. xxiii.

²⁴ *Palestine Exploration Quarterly*, op. cit.

²⁵ Myres, *Handbook of Cesnola Collection*, p. 475.

²⁶ Tomb 318, no. 24, *S.C.E.* I, p. 127, pl. xxii and cxliv (no. 4).

²⁷ As assumed in *Megiddo Tombs*, p. 169.

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In any case the pottery seems to indicate a date not earlier than E.C. IIC. A similar pin occurred in tomb 28, which seems to belong to E.C. III.

Thus in Cyprus the type runs from E.C. Ia to E.C. IIIB with variants running down to M.C. IIB (19th-18th centuries B.C.). Outside Assyria and the Habur this distribution is unique, yet as in those areas this class of toggle has a marked chronological priority, and as it is known that by E.C. IC Cyprus was in contact with the eastern mainland, it is difficult to escape the conclusion that this pin form was ultimately derived from the Habur by way of Phoenicia.

Gotze²⁸ may be correct in deriving the Trojan pin from a Cypriot model; there are some indications that after the close of E.C. I Cyprus had cultural contacts with western and southwest Anatolia, and the type is absent from Kusura, which is roughly midway between Alişar²⁹ and Troy.

JAMES R. STEWART.

NOTE

Since this note was written Miss Grace has published (*American Journal of Archaeology*, 1940, XLIV, 104) a tomb-chamber excavated by the University of Pennsylvania Museum Expedition at Lapithos (Cyprus) in 1931. This tomb, not yet entirely published, contained a Middle Minoan Ia pot in an E.C. IIIa context. This indicates that E.C. IIIa cannot have commenced before the 22nd century B.C., and must have ended later than 2100 B.C., the date conventionally adopted for the transition from E.C.-M.C. This necessitates a correction in the note: E.C. IIIB cannot be placed as early as the 23rd century, but should lie in the late 22nd or early 21st century B.C. It is not yet possible to evaluate the effect of this new evidence on the Vounous chronology, but the writer must concede that in general any lowering of the date for the end of E.C. makes it less necessary to maintain a high date for E.C. I. The possibility should therefore be born in mind that Vounous tomb 164B should be dropped from c. 2500 B.C. to the late 25th century: this would bring down the date of the two toggles from the 28th-27th century to the 27th-26th century.

The report on the Tarsus Excavations of 1938 (*American Journal of Archaeology*, 1940, XLIV, 72, fig. 21), shows that the toggle of type I was in use at Gözlü Kule somewhere about the 20th century B.C.

²⁸ *Troja and Ilion*, I, op. cit.

²⁹ The similar pin from Alaca Höyük (*Türk Tarih Kurumu, Belleten*, 1937, I, 238, fig. 5, no. 28, and *Alaca Höyük Hafriyatı*, 1935, pl. LXI, 28), appears to have had the hole drilled after casting. The period would appear to be of the Hittite Empires.

Reviews

SAGGI DI ESPLORAZIONE ARCHEOLOGICA A MEZZO DELLA FOTOGRAFIA AEREA. By GIUSEPPE LUGLI. *Roma : Istituto di studi romani*, 1939. *Price not stated.*

This publication is the outcome of the persevering efforts of Professor Lugli to introduce archaeological air-photography into Italy. In 1938 he addressed the National Congress of Roman Studies on the subject, with the result that it was recommended that definite action should be taken, following the examples of England, France (in Syria), and Germany. A commission was appointed, the first results of which are published in the present work. Amongst the objects to be pursued were enumerated the following :—ancient cities, centuriation and ancient cultivation generally, Roman and pre-Roman roads, submerged harbours and moles, lake-dwellings, camps and forts, burial-places.

The present publication deals with the city and port of Anzio, the region between the Alban hills and the sea, and the Appian way in Apulia.

Antium, a Volscian city which became a seaside resort in the later Republic, was deserted in the Middle Ages and only resettled in recent times. Its study, with the classical remains largely buried under buildings of the last four hundred years, presents the same difficulties as many other ancient sites in Italy. One of the two main problems set to the investigators was solved. The lines of the harbour with its single entrance and the lighthouse at the end of the longer quay, can be deduced with certainty from the air-photograph now published. In the 'Villa of Nero', a tangled complex of buildings of many periods, the emergence of a great exedra with two concentric walls facing the sea, is a result obtained more easily than could have been done by a ground survey, where differences of level and modern buildings disguise the true lay-out of the site. Beyond this the results throw little additional light on the topography of the city. That the seaward end of the vallum had been disturbed beyond possibility of recognition was indeed foreseen, and the failure to map the exact course is not serious. The lack of any indication of the original settlement is more disappointing. The cemetery investigated by Antonielli (*Studi Etruschi*, 1, 40) is among the earliest Iron Age sites in this part of Italy. It seems unlikely that the original settlers occupied the whole area within the existing vallum, and we might have hoped for some clue to the site and extent of the primitive village.

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The evidence of centuriation, as here presented, is less easy to appreciate, and it would have been helpful if explanatory diagrams of each plate had been given, as in the case of plate II*. Plate IV shows a system of rectangular fields; but these present differences of tone which, so far as one can judge from the reproduction, seem to be due to vegetation. The field-boundaries are very sharp, but there is no visible sign of lyncheting. The fields, in fact, present all the appearances of quite recent cultivation. It is possible, of course, that modern cultivators have everywhere adopted the ancient field-boundaries, or subdivisions of them; but to establish the presence of centuriation beyond cavil it would be desirable to publish air-photographs of an area that had never been re-cultivated since its original abandonment, or where modern cultivation did not respect the old boundaries.

On the technical side it should be said that the photographs appear to have been taken too high. It is not possible, on the reproductions, to interpret details as one would wish, because of the smallness of the scale (plates IV to VI are 1 : 19,000). A few photographs on a very much larger scale (say 1 : 2000) would have helped considerably. It must always be realized that the art of securing good archaeological air-photographs is one that demands special study, just like any other art. It is necessary to study the best lighting conditions (height and angle of the sun), the best angle of view (generally that looking *into* the sun), the best time of year and day, the best height; and different sites have to be treated differently in accordance with the special features of each. It is not possible for a person who is entirely ignorant of these necessities to secure good results in the air except by chance; they cannot be obtained by pressing a button. Good results can only be guaranteed when the person who takes the photographs is himself an archaeologist.

O.G.S.C. and C.A.R.R.

GLASS VESSELS BEFORE GLASS-BLOWING. By POUL FOSSING.

Copenhagen : Ejnar Munksgaard, 1940. pp. xvi, 150, and 109 text-figures. 12 Kr.

Scholars have long voiced the wish that someone would write the story of sand-core and other early glass vessels, and it is curious that we have had to wait so long for its realization, for the subject is not unattractive, and the material exists in plenty in museums and private collections. But the long wait has not been in vain: this book is so good that it will remain the standard text-book for many years to come.

Dr Fossing has spared neither time nor pains in following up every clue that would guide him on his way. He has been able to extract a quite surprising

* But even here the diagram does not face the plates, so that reference from the one to the other is not as easy as it might have been made.

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amount of knowledge out of the all-too-scanty remarks about glass in excavation-reports and the like, and the result is that he is able to divide the sand-core glasses into four clearly distinct chronological groups : (a) second half of second millennium B.C. ; (b) 6th to 4th century ; (c) 4th to 3rd century ; (d) 2nd century and later. Beside the sand-core glasses, which occupy the bulk of the story, he has brought together a number of block-cut and mould-pressed specimens of various dates, which prove that those techniques were known far earlier than many of us either realized or suspected. Yet the numerical evidence of the finds clearly shows that sand-core held the field for centuries, and that neither cutting nor mould-pressing was anything but a rarity before the later Hellenistic period.

The pictures, though printed on the text-paper, come out well ; the printing and production are adequate and scholarly ; and both author and publisher are to be congratulated on a work which not only fulfils a need, but does so at a price within the means of all of us.

D. B. HARDEN.

FIGURINES FROM SELEUCIA ON THE TIGRIS : discovered by the Expeditions conducted by the University of Michigan with the co-operation of the Toledo Museum and the Cleveland Museum of Art, 1927-32. By WILHELMINA VAN INGEN. *Ann Arbor : the University of Michigan Press ; London : Humphrey Milford, Oxford University Press, 1939. pp. ix, 374, 93 plates and 2 plans. 5 dollars.*

Among the objects recovered during the excavations conducted at Seleucia during the seasons 1927-28 and 1931-32 by the American Expedition was a large number of figurines mostly of terra-cotta, but including more than 150 of bone and nearly 100 of alabaster, marble or plaster. Most of these were found in what was probably a temple precinct, and in a residential district, and occurred in all the four levels excavated. They appear to have been made on the site, but no workshops were discovered and only a few moulds.

These figurines have now been studied by Wilhelmina van Ingen, and catalogued in the volume under review.

The figurines are grouped by materials, and within each group by types ; no less than 676 pieces are illustrated in the 93 collotype plates placed at the end. The description is full, references to the general type are given at the beginning of each section and repeated in the case of individual pieces, where appropriate. There is also a full bibliography.

In an introduction of 52 pages the author discusses the technique, the meaning and use of the various types and the costume ; a special section deals with the bone figurines, and in a final section the style and relations with Parthian Art are considered.

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Some points of special interest may be noted.

Only a small area of the Seleucid Level having been excavated, it is not yet possible to say what types appear for the first time in the Parthian period, but, on the evidence so far obtained, it cannot be shown that Greek influence predominates in the earlier levels, and in all the three upper levels Greek and Parthian styles persist side by side (p. 7).

Of the alabaster figurines, usually dated, on account of their Hellenistic character, to the Seleucid period, far the greater number were found in the two upper levels, datable to the first and second centuries A.D. (p. 7).

Oriental and Greek types are throughout parallel, but there is a merging in the two upper levels, Greek types being done in Oriental style and vice versa (p. 8).

One plaque (No. 495) is remarkable for its affinities with the Samian style.

The evidence of the bone figurines is noteworthy. None occurred in the Seleucid level, and, of the remainder, the highly conventionalized types were predominant in the lower Parthian levels, outnumbered the naturalistic in the middle, and in the upper level were less common than those. Thus the trend was away from the conventionalized to the naturalistic, not vice versa. Later examples of these conventionalized figurines have been found at other sites and form a link with certain Coptic bone figurines, and, in view of the admitted influence of Mesopotamian design on Coptic and Early Christian Art may be another evidence of connection between the Tigris Valley and Egypt (p. 46).

The general conclusion reached by the author is that Parthian Art, as exemplified by the figurines was eclectic but not so deeply Hellenized as has been assumed; that actually it was the re-emerging native tendencies of Babylonian Art that received a fresh impulse as the result of the Parthian Conquest, that this stylistic movement was part of a larger movement which was taking place throughout the Mediterranean area (p. 51); and that the Parthians were determiners of direction rather than originators (p. 52).

These unpretentious objects, though for the most part lacking in merit, have their place in helping to build up a true conception of the intricate artistic history of the Near East in a transitional period. This careful and orderly presentation of the material is therefore most welcome.

The only criticism that suggests itself is that, in the plates, in spite of the evident care taken with them by photographer and printers, details frequently cannot be made out, and it must be recognized that collotype is not the most suitable medium for representing plastic objects. On p. 12, 10th line from end, LXXVII should read LXVIII; p. 17, 3rd line from end XXXVI should read LXXXVI; pl. LXIV, no. 109b should read 1097? *ibid* no. 1106 should read 1105?

W. A. HEURTLEY.

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THE FAUNA OF ANCIENT MESOPOTAMIA AS REPRESENTED IN ART. By E. DOUGLAS VAN BUREN. In *Analecta Orientalia* 18. *Pontificum institutum biblicum*, Rome, 1939. pp. 113 and 23 plates. 130 lire.

With remarkable industry the author has collected all that is known of the artistic representation of animals in ancient Mesopotamia, and has arranged her material according to period and cultural provenance. Her work will long form the basis for all future research in this field. She seems to have intended her book primarily for archaeologists; but it has a far wider scope, and is of the highest importance to students of cultural history, zoologists, palaeontologists, students of domestic animals, etc. These, however, would find it more easy to use if a list were given of the abbreviations employed for the numerous periodicals quoted, which are naturally familiar to the Assyriologist but not necessarily to specialists in other branches of learning.

The author is not herself a zoologist; but she has worked with remarkable industry in what is to her mainly an unfamiliar science, acquiring in the process an experience which has generally brought her considerable success in the new identifications which she makes: e.g. when she interprets certain figures as those of jerboas (fig. 29). On the other hand, she recognizes and rightly emphasizes the fact that not every representation can be identified: e.g. certain small creatures, some among which she is probably right in taking as martens, weasels or the like (figs. 20-22), and which appear to have borne a certain cult-importance, to judge from their frequent similar representation.

Elsewhere one cannot agree with the author, as for instance in her interpretation of certain pithecoïd figures as gibbons (*Hylobates*): the gibbon is found only in Further India. Even if we can assume the intermediate influence of the Old Indus-culture (as is admittedly justified in other cases, e.g. the rhinoceros), there is still no evidence for the gibbon. Likewise, in my view, the evidence for *Antilope cervicapra*, today exclusively domiciled in India, seems at least very uncertain. The sections dealing with antelopes and gazelles seem particularly to suffer from the fact that the author is not a zoologist; it would have been a good plan to have consulted a trained specialist on these and other points. Such things could then have been avoided as the distinction which Mrs Van Buren attempts to make between panther and leopard, *Felis chaus* and *Lynx chaus*. Small mistakes like this, however, can never be wholly avoided: whether the writer of such a book is zoologist or archaeologist, the specialist in the one or the other is bound to find this or that error, unless his advice has first been sought.

But these trifling objections must not be allowed to obscure the value and importance of Mrs Van Buren's work. We are especially grateful for her careful attribution of the finds to definite cultures and epochs: this enables us to

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ascertain the changes among the successive Mesopotamian peoples in relation to their fauna, and so to establish important cultural conclusions and to realize changes among the fauna and consequently of climate, with all that this implies as regards culture ; finally light is thrown upon the status and history of domestic animals and upon the evolution and acquisition of individual breeds. However, we must not infer that a particular animal was lacking in a particular period simply because it is not represented in the art of that period : the artist's silence may have been due to other causes, e.g. religious grounds. Mrs Van Buren rightly draws attention to the lack of elephant-pictures before 800 B.C. ; the only such representation from Tell Asmar is either the result of old Indian influence or an entire importation. The same is true of a picture of a rhinoceros ; the hare too is not found among the representations of the earliest period, but one cannot draw any definite conclusions from this. If inferences are to be based upon these animal representations, extreme caution and critical care is necessary ; and it is exactly in this way that the author is so helpful, not only with her material but because of the manner in which it is set out. The importance of the book for the history of domestic animals may be seen from the sections on the cat, sheep, dog, horse, etc. In the part dealing with the horse, special importance attaches to fig. 32, because it admits of no possible doubt, and to the representation of a rider in fig. 36.

If the interpretation of the smaller mammals presents difficulties on all sides, the same applies still more to birds and the lower animals. The material available for these is not so comprehensive as it is for mammals—thus the latter occupy 82 pages of text, while the former have only 30, of which 14 concern birds and the rest are devoted to reptiles, frogs as the only amphibians, fishes, flies, grasshoppers and their affinities, spiders, scorpions, cuttle-fish, crabs and starfish. Snails are not mentioned. M. HILZHEIMER.

DIE LANGOBARDISCHEN GOLDBLATTKREUZE AUS DER ZONE SÜDWÄRTS DER ALPEN. By SIEGFRIED FUCHS. 1938. RM. 9.80.

The Lombardic gold-foil crosses of the Migration Period, a class of antiquities widely scattered, insufficiently known, and often despised, are here for the first time subjected to comprehensive study. The author, who confines himself to the Italian material, has compiled a catalogue of 187 examples, a number far greater than any previous list.

The first important step is a classification of the crosses according to technical and stylistic characteristics, which yields interesting results from the point of view of distribution. Certain types of design are found to be associated with some particular region. But the main point is that the crosses with ornaments produced from wooden press-moulds, which include all those with

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Teutonic animal and interlace patterns, are found almost exclusively in northern Italy and in the neighbourhood of Benevento, while the crosses with much simpler designs, produced from stamps, mostly occur in central Italy. Dr Fuchs suggests that the Lombards in central Italy, being in closer touch with Roman and Byzantine art, did not cling to their own ornamental designs in the same way as the more secluded communities in the north and south.

The first group, which is of course the most important one, can be subdivided according to the manner in which the moulds have been applied. There are varying degrees of skill in fitting the pattern into the four arms of the cross. The author takes this to be a sign of gradual evolution and thus finds his first criterion for dating the crosses. Other chronological clues are provided by two crosses with inscriptions convincingly deciphered as the names of King Clef (572-584) and King Agilulf (590-615); by crosses with coin impressions, and others belonging to dated tomb-groups; and finally by crosses which bear a stylistic resemblance to other and better known classes of objects such as fibulae, coins, and reliefs in metal or stone.

With the help of such chronological data Dr Fuchs establishes some general facts concerning the development of the crosses. One is that in the early period the shape of the Greek cross is the only one known, while later the Latin type is also frequently used. Another general rule is that all the richest and most fantastic examples of Teutonic ornament are found on the early crosses belonging to the sixth and the beginning of the seventh century, while later on, as the artists are more and more influenced by their southern environment, one finds clearly recognizable human faces as well as classical foliage ornament.

This result leads on to some rather dangerous generalizations. The evolution of the crosses is interpreted by the author as a fusion of Germanic and Mediterranean traditions, and since it is from that fusion that medieval art was born, the crosses are regarded by him as marking a turning point in European art history. It is undoubtedly true that in the evolution of medieval style the amalgamation of classical and barbaric elements plays an important part. But what we see on these crosses is quite a different thing, namely the Teutonic tradition gradually giving way to southern taste. It was in the Saxon art of the eighth century that the two currents first began really to interact upon each other, while a final synthesis was not reached before the Carolingian, or even the early Romanesque, period. The author overrates the importance of his subject. He thinks that from the peak which he has climbed he can see the whole of early medieval art, whereas in fact the view is confined to a small part of the art history of the Dark Ages.

As a study of this episode, however, the book is important and useful. Perhaps the most difficult problem which the author had to face is that concerning

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the origin of these crosses. The Lombards of the pre-Italian period, although already christianized, did not have them. But contrary to the view hitherto held the production begins very soon after their arrival in Italy. Yet Dr Fuchs is disinclined to regard the not very numerous gold-foil crosses of the Byzantine sphere as their prototypes. The fact that there are from the outset regional differences in the technique and ornamentation of the Italian finds also appears to indicate that there was no fixed tradition imposed on the Lombards from outside. Dr Fuchs shows that most of the crosses must originally have been sewn on garments, and there is reason to believe that in this position they were not only part of the tomb-furniture but were actually worn by living people. He suggests that they are an original creation of the Lombards in Italy, occasioned by their gradual conversion from Arianism to Catholicism and worn by the neophytes as a kind of badge.

E. KITZINGER.

A HISTORY OF SPANISH ARCHITECTURE. By BERNARD BEVAN.
Batsford, 1938. 21s.

No general account of Spanish architecture has appeared for some 90 years, so that the publication of this book could not fail to be of value. But Mr Bevan's wide knowledge and careful scholarship make it a work of first-class importance. No claim is made to comprehensiveness, but as a 'condensed evolutionary study' of a curiously chaotic history it is intelligent, clear, and readable. He has wisely restricted the chapters dealing with the better known aspects of the subject—Mohammedan, French-Castilian, and Herreran,—in order to give more prominence to pre-Romanesque, Romanesque, and Mudéjar, to the Plateresque of the Golden Age and Baroque, and a good chapter on the castles of Castile.

Several factors make the study of Spanish architecture particularly difficult. Mr Bevan quotes Lampérez's phrase: 'The Art of Spain is alluvial'. And it is characteristic of architecture in Spain that no national style was evolved. The lack of coordination between Christian states in the Muslim period is echoed throughout later times by a conspicuous lack of uniformity in architectural style. Different parts of the country are subject to different foreign influences, and the fancy of individual architects, so that it is only under the Herreran 'dictatorship' and the neo-Classical Academy that anything like uniformity appears.

This is further complicated by the extreme conservatism of Spanish architects. Thus Romanesque portals were built at Tarazona and Zorita del Páramo in the 16th century, Gothic was still alive in the 18th, and Spanish Baroque flourishes in the New World today. This conservatism also results in the adoption of innovations without a true understanding of the principles of their

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construction. Thus octopartite vaulting is adopted without its fundamental mechanical principles, e.g., the substitution of a horizontal for a vertical thrust, and as soon as French architects disappear, Spain reverts to the heavier principles of Romanesque. And Plateresque misunderstands Florentine ornament and misuses Italian construction because no attempt is made to understand Renaissance ideals, and the architect chooses to think of an exterior as a *retablo*.

But Mr Bevan has given us a clue for this maze. Particularly interesting are the chapters on the Asturian churches and on Mudéjar. There is some account of the fascinating baroque of the New World; we wish it could have been longer. Problems such as the origin of the dome with pendentives and the horseshoe arch are discussed briefly but carefully, though in the latter case Mr Bevan has not been able to avoid some obscurity in dealing with a very difficult question.

The plates and diagrams are excellent, and there are some useful maps. The captions beneath the plates show an unfortunate tendency to be influenced by the style of certain picture-papers. And some readers may not know the meaning of such terms as *mihṛāb* and *maqsūrah*. But it is an excellent book.

MERIC DOBSON.

JERNALDERS BOPLADSER I HIMMERLAND (Settlements of the Iron Age in Himmerland). By GUDMUND HATT. *Aarbøger for nordisk Oldkyndighed og Historie* (Annals of Nordic Archaeology and History). Copenhagen, 1938, pp. 119–226 with a *résumé* in French: *Stations de l'âge du fer en Himmerland*, pp. xxxiii–xlvi, illustrations and 12 maps.

Professor Gudmund Hatt's careful research into the settlement and agriculture of the Iron Age in Jutland has provided highly valuable contributions to Danish archaeology. His researches began in 1922, when, as an Assistant-keeper of the National Museum and working in conjunction with the late Hans Kjær, he carried out the now famous excavations of a settlement of the Iron Age near Ginderup in northwest Jutland.¹

About 1930 he also began a careful and wide research into the traces of agriculture in the Iron Age still to be found in the heaths of Jutland. We must be especially grateful to him for this work, for it was completed just before the tractor came to destroy the remaining traces.² Since then he has been successful in proving more than one hundred examples of the Iron Age system of agriculture scattered over the Jutland peninsula, about one-third of which have been measured and mapped out.

¹ See G. Hatt, *Jernaldersbopladsen ved Ginderup i Thy* (A Settlement of the Iron Age near Ginderup in Thy), Copenhagen, 1935, and *ANTIQUITY*, 1937, xi, 162–73.

² Idem. 'Prehistoric Fields in Jylland', *Acta Archaeologica*, II, 1931.

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Meanwhile he continued his investigations into the settlements³ and devised a special technique of his own. According to this, the measuring is done in sections of one square metre, but the excavation is done in layers proportionate to the size and shape of the settlement examined. Where formerly details found in an area of a few square metres were considered sufficient, today the shape and size of an entire layer are disclosed. If the dwelling was not burnt down, its walls are discovered by finding the edges of the clay floor, or by the changes in colour of the layers of earth. These edges and changes in colour were virtually overlooked by archaeologists of former days, who could not explain them for the reason that they did not uncover the entire building at once.

At the same time, in contrast to the old methods of excavation, Professor Hatt draws each stone and detail on the spot in its true dimensions. In this way later scientists can work with the plan of the excavation as well as they could do on the site. For the perfection of this method all that remains is a technical improvement in colour-photography sufficient to allow colour-films to be widely used in research. In Professor Hatt's plans all observations are included, no matter whether they can be explained or whether they fit into the picture formed by the archaeologist and based on his present knowledge. This prolongs the investigations, and necessitates the employment of scientifically educated workers for all excavation other than the task of removing the topmost layer of earth above a settlement.

A settlement is most frequently discovered by a plough striking layers of stones. In 1937 and 1938, however, Professor Hatt succeeded in finding two ancient settlements lying untouched in uncultivated heaths, and the publication under review deals particularly with them.

Of especial interest is the discovery of a village in Skørbaek, for here were found the sunken walls of four houses, which were inhabited by as many families, surrounded by arable land which must have provided them with their daily bread. The area was about one hundred hectares, but the inhabitants did not cultivate the whole. A few years ago the National Museum found here a settlement which, like the fields, dated from the Early Iron Age. Moreover, reliable evidence exists that there was once another settlement in the middle of the field near the area known as Brønd II (well II). In shape this field is an irregular quadrilateral, which was made by ploughing in two directions. The fields examined are surrounded by earth-banks, and on the slope by low lynchets.

³ Idem. *To Bopladsfund fra ældre Jernalder* (Two Settlements of the Early Iron Age), Copenhagen, 1930, with a *résumé* in French; *En Brandtomt af et Jernaldershus paa Mors* (A Burnt-out House of the Iron Age in Mors), Copenhagen, 1935, with a *résumé* in French; 'Oldtidens Landsby i Danmark' (Ancient Villages in Denmark) *Fortid og Nutid*, 1936; *Landbrug i Danmarks Oldtid* (Agriculture in Denmark in Antiquity), Copenhagen, 1937.

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The four house-sites, clearly visible on the surface, belonged to houses with walls made of earth. The roof was supported by two rows of posts about 2 to 3 ft. on the inner side of the walls. These dwellings date from the first century A.D. During the excavations four other house-sites were found, dating from the first century B.C., three of which had smaller posts supporting the roof. Between these posts the wall was made of clay, and the construction was therefore of an entirely different kind from that of the houses with earth-walls.

Researches made by Professor Hatt in other parts of Jutland show that about the beginning of the era here considered houses made of clay, which were comparatively cold and had little power of resistance, gave place to houses built of earth, which were warmer and better suited to the damp climate. It also became necessary to keep domestic animals in sheds. The houses were therefore divided into a habitable part with a clay floor, a fireplace and frequently a dais for sleeping or sitting on, and a lower part with the floor made of earth for the accommodation of animals. In one of the houses at Skørbaek the floor was found to have furrows on which partitions had been erected, forming stalls. As was customary, the houses were placed east and west. In the surrounding fields there are several burial-mounds; one was excavated several years ago and found to date from the Stone Age. This place was inhabited continuously until the first century A.D., when the houses with earth walls fell to pieces.

At Østerbølle, south of Himmerland, traces were found of nine long-houses and three smaller buildings, all of which had earthen walls and belonged to the Roman Iron Age. Ploughing had destroyed some half-dozen of the houses here, three of which were examined by Professor Hatt. One, which had been burnt down, contained a large quantity of grain, mainly barley with some rye and oats. There were also remains of threshed barley, which must have been stored in the houses. On the floor there lay a heap of linseed mixed with rape-seed. A large vessel contained sprouting barley, probably intended for malt, and in the fireplace there stood a sacrificial vessel similar to others found in houses of the Iron Age in Jutland. Near the village a well was found and also a cemetery with seven untouched and a number of ruined graves.

A settlement in the district of Aars, a similar one with earth-walls at Engestrup, and some more or less preserved at Malle Hede and Malle Degnegaard are described. The settlement in the last-named place dates from pre-Roman times and had clay walls with cross-beams fixed in them.

Professor Hatt gives a short review of the information so far discovered as to house construction in the Iron Age in Denmark and neighbouring countries. He points out that the buildings formed a uniform type, only minor exceptions being noticeable in their furnishing, shape and position. This proved a considerable cultural unity among the different settlements in Jutland.

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This type is also closely related to the Swedish and Norwegian houses of the Iron Age and to a similar type in the British Isles, as well as to the houses at Warfs in the province of Groningen examined by Dr van Giffen.

The author announces forthcoming publications which will describe the settlement areas of the Iron Age in the extreme north of Jutland (Thy and Vendsyssel) and in the west. The greater part of the material has already been collected, and a considerable excavation near Nisum Fjord will be completed next year. We may therefore look forward to a comprehensive publication of general importance of the houses of the Iron Age in Jutland.

AXEL STEENBERG.

HANDBOOK OF LATIN AMERICAN STUDIES. A selective guide to the material published in 1937 on anthropology, art, economics, education, folklore, geography, government, history, international relations, law, language and literature. *Edited by* LEWIS HANKE. *Harvard University Press, Cambridge, Mass.* [Milford] 1938. pp. xvi, 635. 4 dollars.

A very useful instrument for every student of Latin America. The title is clear enough as to the contents of the volume. Apart from the careful bibliographies, there are general statements on present problems in each branch of study, and special articles such as Martin S. Noel's 'History of Art in South America during the colonial period', F. C. Lange's 'Musical studies on Latin America recently published', and others.

JACQUES SOUSTELLE.

LA CATHÉDRALE DE GRENOBLE, du ix^e au xv^e siècle. By PIERRE DAVID. *Paris : Picard, 1939.* pp. 121, 13 plates. Price not stated.

The cathedral of Grenoble has occupied very little space in archaeological or architectural literature and is indeed a building of only secondary importance and interest. Though it was greatly disfigured in the 18th and 19th centuries the author has succeeded in producing a scheme of evolution which has at any rate the merit of probability; further investigation is necessary to prove it. According to M. David the cathedral occupies the site of the original cathedral in the north angle of the Roman enceinte of the city. It has from an early date consisted of two adjacent churches, the cathedral of Nôtre Dame and the church of St. Vincent flanking it on the north. This latter church has been set between the Roman city wall and a second Roman wall of hardly less thickness on the south; the existing chancel is a structure of the 12th century. Nôtre Dame is a basilican church erected after the conclusion of a very unsettled period and from about 950 to 1020: the original apse of this building was found in 1840. At the west end is a tower-porch assigned to the 9th century, of which the first floor formed the chapel of St. Michael. The upper part of the tower is built of

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brick and is of the same build and material as the body of the cathedral of Nôtre Dame. A cloister and portal of which there are some remains were the work of St. Hugh, bishop from 1080 to 1132, and in the latter part of the 12th century the cathedral was vaulted.

Such, in brief, is the early history of this building as explained by the author. It is of very considerable interest as a contribution to the planning of these cathedral quarters, if we may so call them, which included two or more churches and a complex of episcopal buildings.

The illustrations might with advantage have been more numerous and the plans should have included an architect's plan of the building as it is. A.W.C.

EARLY GERMAN ART AND ITS ORIGINS. By HAROLD PICTON. *Batsford*, 1938. pp. XII, 148 and 320 illustrations. 21s.

An English pupil of Professor Strzygowski has presented us with a history of early German art 'from the beginnings to about 1050'. Adopting his master's viewpoint, Mr Picton is naturally more concerned with the barbaric, abstract and ornamental elements in German art than with its classical inheritance. In his opening chapter, in which he traces the origins of Germanic ornament, he leads us far into the prehistoric period not only of European but also of Asiatic art, and there he finds the standards which he subsequently applies to architecture, painting and sculpture of early medieval times.

The main objection to this book is not that it is biased and one-sided—it must be admitted that the author has on the whole refrained from reproducing the more fantastic of Strzygowski's theories, especially his most recent ones—but that it is muddled and confused. Detailed observations, sometimes original, more often taken from other writers, do not make a coherent story and somehow the main point is always missed. He fails to give the English student that 'Überblick' which he professes has been his aim to convey.

Nevertheless the book can be recommended on account of its wealth of admirable illustrations. These present a pictorial survey of early German art which both experts and laymen will be glad to possess. E. KITZINGER.

VENDEL I FYND OCH FORSKNING. Skrift utgiven af Upplands Fornminnesförening, under Medverkan av HOLGER ARBMAN, MANNE ERIKSSON, SUNE LINDQVIST genom OSKAR LUNDBERG. *Stockholm: Wahlström & Widstrand. Uppsala: Almqvist & Wiksell*, 1938. pp. 97, 2 maps, 26 illustrations. 3 Kr.

In August 1881 the churchyard at Vendel in Uppland, Sweden, was being enlarged, when a number of ship-burials were discovered. Under the direction of Professor Hjalmar Stolpe, no fewer than eleven were laid bare in 1881 and

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1882, and in 1893 three more were found. In 1924 it was proposed to erect a monument to mark the discoveries ; this was done in 1937, and a by-product has been the publication of this book.

There are six sections—The Vendel Finds, by Holger Arbman ; a description of the 14 graves, from the classical account by Stolpe and T. J. Arne (1912) ; Vendel as Royal Seat and Farmers' Community, by Oskar Lundberg ; the Finds by Sune Lindqvist (speech made at the dedication of the monument) ; Villages and Hamnas in Vendel, by Manne Eriksson ; Vendel and the Oldest 'Dombok', by Oskar Lundberg. Summaries of four of these sections, in English, follow with supplementary material, not given in the Swedish text, on the relationship of Vendel to the Old English poem of *Beowulf*.

Vendel in Uppland has two interests—literary and archaeological—which are closely linked. In the first place, Ohthere in *Beowulf*, otherwise Ottar, king of the Swedes, was nicknamed 'Vendelcrow' ; and in 1904 Knut Stjerna attempted to show (see his *Essays on Beowulf*, 1912, translated J. R. Clark Hall) that the Vendel referred to was Vendel in Uppland, not a site in Jutland, as had previously been thought. The Vendel finds, long unique in Sweden, seemed to support the theory of the importance of the site, and the possibility of its being Ottar's death place, while an 'Ottar's howe' is found in the neighbourhood. But the subsequent discovery of richly furnished graves at Valsgärde and Ultuna makes it impossible for us to go further than say that the family buried at Vendel were presumably chieftains of the district. The nickname 'Vendel crow' is still given to inhabitants of the district, just as nicknames, more or less cogent, are assigned to inhabitants of parishes in Britain (Orkney is a striking example). But whether the Vendel nickname is old may be doubted, so that further evidence is needed to make the connexion of Ottar with Vendel a certainty.

The archaeological features of the Vendel finds are of particular note, for we have a collection of ship-burials which have given their name to a period, and are characterized by the presence of a decorative style commonly called the Vendel Style. We have, too, an extraordinary example of continuity, for the burials may be dated in unbroken line from the 6th century to the 11th ; and we get the impression of a race of petty kings, each following his father's way of life and of burial. Doubtless it was the increasing influence of Christianity in Scandinavia in the 11th century that put an end to a method of interment which had persisted, it may be, with but little change since the chambered barrow.

The contents of the graves show belief in a material future life, as evidenced by the skeletons of horses and by remains of weapons and other trappings, while skeletons of dogs, a hunting falcon, and even of a tame crane show how food was to be obtained. But to ensure the dead man's comfort, utensils were

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included in the grave furniture, and an adequate supply of food, including in some cases even joints of meat or mutton.

The ornamentation falls into two types—human figures and animal motifs. This part of the work is particularly interesting, as showing the contacts which Scandinavia had with the South ; for it is made clear that certain of the ornamental types have affinities with Britain, others with the Rhine district, while the magnificent helmets which are the main glory of the finds are possibly modelled on the Roman cavalry helmet of the late Empire. Even half an Arab coin of the 10th century was found. And it must not be forgotten that many of the weapons, and of other trappings such as bridles, would be heir-looms, and therefore considerably older than the graves in which they were found.

The illustrations are not all new, some of them having occurred in Montelius ; but they are excellent, and do not detract from the appearance and the value of this publication.

ANGUS MACDONALD.

TROLDEBJERG, en bymaessig Bebyggelse fra Danmarks yngre Stenalder.

By J. WINTHER. Tillaeg. Deutsches Zusammenfassung. Eget Forlag : Langelands Centraltrykkeri, Rudkøbing, 1938. pp. 27, 32 *illustrations, large-scale plan in end cover.* 7 Kr.

This is the supplement to a previous volume* by the same author, published in 1935, on the late Stone Age settlement at Troldebjerg, on the Danish island of Langeland. It continues the account of the excavations there during 1935 and 1936.

The fresh investigations brought to light more houses, mainly horseshoe-shaped, and many with pot-holes. There was also certain evidence of secondary settlement, in that one house was found on top of an earlier site.

The articles found included flint axes of various types, chisels, scrapers and arrows ; there were also a number of bone implements. Pottery was well represented by some 14,000 fragments, half of them ornamented. A favourite device was the ' thread line '.

From the later material certain details of the life at Troldebjerg become fairly clear. Evidently the settlers cleared the site of all but the largest stones, then felled the trees and burned the branches and brushwood, presumably preliminary to growing corn. The logs were then charred into useful shapes, and the charred wood removed with scrapers. Doubtless the landing bridge found was produced in this way.

The remainder of the material is more controversial. One controversy among students of the Stone Age is the relative date of ' sacred fire-places '

* Reviewed ANTIQUITY, 1935, ix, 511.

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(Helligt Ildsted, heilige Feuerstelle). Dr Winther maintains that the Troldebjerg evidence makes it clear that these belonged to the Stone Age, and were presumably centres of fire-worship. Another difficulty raised is the resemblance of one of the sites (house 19) to the chapel in the King's Palace at Knossos, allowing modifications to suit the different site, while even more interesting is the site which Dr Winther calls the 'Solbjerg' or sun-hill, which he thinks was a centre of sun-worship. It was certainly not a fortification, as local legend has it; its use as an Iron Age cemetery is quite demonstrably secondary. It could not, from the evidence found, have been a simple dwelling-place, and its formation and orientation seem to mark it as a temple, connected, Dr Winther thinks, by inspiration with the Eastern Mediterranean. ANGUS MACDONALD.

THE CITIES OF THE EASTERN ROMAN PROVINCES. By A. H. M. JONES. *Oxford: The Clarendon Press, 1937. pp. 576 and 7 maps. 35s.*

It is strange and disappointing to find a book bearing this title and advertised as 'furnished with detailed maps' containing not a single plan of a city. The maps, on a scale of 1 : 1,000,000, show merely the regions in question. More astonishing still, nothing is said of the present condition of these cities, and no mention is made of the work done by archaeologists and architects on such things as topography, temples, churches, walls, public and private buildings. There are over a hundred pages of notes in small print: here one would have expected at least references to such matters. The fact is that the book is entirely concerned with the literary and historical aspects of its subject, and a sub-title to that effect ought to have been added. However, even the historian will not get from it what the title leads him to expect, as the first sentence of the introduction shows: 'The object of this work is to trace the diffusion of the Greek City as a political institution through the lands bordering on the eastern Mediterranean which were included within the Roman empire'. It is a reviewer's duty to expose such misleading titles. The author has put an enormous amount of labour into the book, and he will pardon me for dealing with this point here; for the responsibility is shared by the publishers. Now if, at the publishers' desire, the book is to be reviewed in a periodical such as *ANTIQUITY*, which is neither purely literary nor historical, this is not the place to criticize it from those standpoints. I content myself therefore with indicating its scope, which extends over Thrace, Asia, Lycia, the Gauls, Pamphilia, Pisidia and Lycaonia, Bithynia and Pontus, Cappadocia, Cilicia, Mesopotamia and Armenia, Syria, Egypt, Cyrenaica, Cyprus.

The cities are described not individually, but as forming part of the political-historical geography of these lands. The period in question extends from the earliest influences of Greek culture down to the time of Justinian. If the

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history of the regions just listed is to be treated down to this late period, the omission of Greece, Macedonia, and Crete does not appear justified by the advertised statement that the book deals with 'the diffusion of Greek political institutions in barbaric lands'. For exactly because it examines in much detail conditions in Roman and Byzantine times, the book offers considerably more than a treatment of the diffusion of Greek institutions. Not only from such inconsistency, but also from much duplication of matter, it can be seen that the book has taken many years to work up and that it has been written without continuity—points for which the author apologises. It is a learned work, with all the apparatus of its kind, as the appendices in particular show; it will be found most stimulating by the historian. But the reader is made uneasy by the words 'certain general conclusions to which I have come in the course of my study, and which I hope to justify in my second book, are implicit in this volume': they force him to submit to assertions that are not proved. Anyone acquainted with these lands will derive pleasure from the book, while it will give him a new history of the Near Eastern region viewed from specific standpoints. B.

THE COMMON PEOPLE OF POMPEII: a study of the graffiti. By HELEN H. TANZER. *Baltimore: Johns Hopkins University Studies in Archaeology*, no. 29. Edited by DAVID M. ROBINSON. 1939. pp. 113, 49 illustrations. 14s.

The best idea of the contents of this book can be given by quoting the chapter-headings, namely, the clothing-trades, bakers, food and food-dealers, inns and eating-places, (public) spectacles and other interests of the people. The illustrations are interesting and amusing; in this connexion may we ventilate a criticism which applies not only to this book but to many others—that some reference should be made to the number of stages they are removed from the originals? In art much is lost by a single process of copying and if the copy is itself copied a false impression is often conveyed, and inaccuracies slip in. The ideal method of reproduction would be that used by 'art-dealers' in their catalogues; but of course one cannot expect such luxuries in books produced for instruction and edification rather than for pecuniary profit. However, this is a relatively small matter; and for the book as a whole we have nothing but praise. It is the kind of book that humanizes its subject; and the scholarship is sufficiently guaranteed by the fact that Professor D. M. Robinson is general editor of the series.

Some of the pictures are really delightful, such as 'Exulting in victory' (fig. 38), and the public-house brawlers (fig. 27). Pompeii was a holiday resort; and it is amusing to find that, then as now, some of the visitors to holiday-resorts

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were disillusioned when they got there and wrote ribald rhymes on the walls ('Eagerly we left our home; now we would go back to Rome'). Then, too, as now, many of the graffiti deal with love and lovers; but naturally not all of these could be noticed. Mediterranean peoples have always been realists; and there is no trace of mysticism in their love-affairs. O.G.S.C.

STYLE TRENDS OF PUEBLO POTTERY in the Rio Grande and Little Colorado Cultural Areas from the Sixteenth to the Nineteenth Century. By H. P. MERA. *Memoirs of the Laboratory of Anthropology*, vol. III. Santa Fe, New Mexico. 1939. pp. 28, 67 plates, map and bibliography. \$7.50.

Dr Mera has assembled a very useful body of evidence showing the development and relation of styles in Spanish Colonial times, in three out of the five ceramic provinces of the Pueblo Area, and has presented it in a lucid and interesting manner. Excavation is hindered by the fact that many of the most promising sites are still occupied, and dated material is thus hard to obtain; but good use has been made of abandoned sites whose dates are known, and gaps have been filled in by a judicious use of dendro-chronology. It is to be regretted that no scale is given on the map showing the provinces, and a map showing the sites mentioned could have been added with advantage. On page 18, plate LX, is misprinted for XL.

Some of the changes of style are tentatively ascribed to contacts between different groups of Indians in the concentration camps of the encomienda system, an interesting suggestion, which may have an application to the mining districts of Peru and Mexico when the post-Conquest peasant art of those areas comes to be studied.

The illustrations are on the whole admirable, particularly the profiles and the half-tone cuts, but a word of criticism must be allowed of the drawings of the decorations, which occupy the bottom of each plate. It is to be questioned whether the use of colour is justified, seeing that it is purely conventional and not an accurate representation of the actual colours of the vessels, a fact of which the reader has constantly to remind himself. These drawings are admittedly diagrammatic, but they seem to have undergone an unnecessary amount of conventionalisation at the hand of the draughtsman, and little attention has been paid to proportion, either in form or in the relative areas of the colours. Many mistakes have been made, of which a few may be taken at random; on plate I, the sloping pairs of lines are shown with a dashed line running longitudinally between them, whereas on the vessel the dashes are transverse like the rungs of a ladder; on plate XI a line is omitted from the top right-hand corner of each panel in the upper row; on plate XIII too many lines are shown

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within each of the triangles which form the main body of the ornament, and, except in one case, they are not drawn parallel to one side as they should be; and on plate xvi the neck decoration is out of register with that of the periphery. The decoration on plate xli is upside down. These may appear to be small matters, but when it is remembered that some writers on American archaeology are very prone to base far-reaching conclusions upon comparisons between illustrations of objects from different areas, it will be realized that accuracy is vital.

Apart from these points, this is a most useful publication, and no better recommendation of it could be given than to express the hope that Dr Mera will soon be able to extend the work to include the Hopi Ceramic Province.

G. H. S. BUSHNELL.

THE BRITISH ISLANDS AND THEIR VEGETATION. By A. G. TANSLEY. *Cambridge University Press*. 1939. pp. xxxviii, 930, with 162 plates containing 418 photographs, and 179 text-figures. 45s.

This book is the successor of *Types of British Vegetation*, which appeared under the author's editorship in 1911. The latter was the first and only systematic study of British vegetation. Its appearance was coincident with pioneer efforts to establish early man in his natural setting in which Mr O. G. S. Crawford had played a leading part.¹ It had long been difficult to obtain, and the time was ripe for a new work to replace the old. The size of the newcomer is in itself an indication of the development of ecological studies in the intervening thirty years.

In writing this book Professor Tansley has had in mind a wider demand than would arise from a comparatively limited group of specialists. His aim has been to produce 'a continuous story which can be read and not merely "consulted" by the student . . . who is not an ecological specialist'. To achieve this purpose the sections on the vegetation which form the core of the book are preceded by others in which climate, soil and other formative factors are discussed, so that within one cover is assembled all that can be needed for a general understanding of the vegetation of Britain in the light of present knowledge. The earlier sections lose none of their value from the fact that they are largely compilations. As far as the non-specialist can discern they fulfil their purpose admirably and provide in readily assimilable form information which cannot easily be obtained elsewhere. In some respects too they draw attention to changes which have taken place since 1911, some of them of importance from

¹ The culmination of this first phase might be said to be Dr Williams Freeman's map of Hampshire (*An Introduction to Field Archaeology of Hampshire*, facing p. 446) which broke new ground in the still new field of archaeological distribution-maps.

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the archaeological point of view ; as, for instance, in the greater stress which is placed nowadays upon climate for its effect upon vegetation. In parts III-IX, in which the vegetation itself is described, the author has throughout remained true to his stated aim. These, the more highly specialized sections, are not only of great value for consultation and reference ; they are also eminently readable, and each has where necessary sufficient repetition of general matter to enable it to stand by itself.

The immediate interest of the archaeologist naturally centres upon part III, in which prehistory and history are dealt with. In its archaeological aspects this part is a good piece of reporting in which orthodox views are set forth, though briefly because of the small space available. The earlier (pre-Bronze Age) and later (post-Roman) periods inevitably receive the fullest treatment because in them the evidence is fuller and more securely founded : on pollen analysis in the one (although this naturally is also available later) and on records in the other. The author's pre-occupation is with the history of vegetation in its own right ; and while it is true that from Neolithic times onwards this subject cannot be divorced from human activity, we may be disappointed but can hardly grumble because he has not thought fit to make anything more than incidental pronouncements on theories advanced from the archaeological side. To do more would have involved greater detail than his scheme probably allowed.

Professor Tansley is at any rate fully aware of the problem set by the first serious impact of man upon his environment, which took place with the arrival of the first stock-breeders and farmers in Neolithic times. And closely related is the question of the primeval condition of the chalk downs. The ecologists increasingly urge the view that the chalk was formerly much more densely forested than it is now, at any rate in the warm damp climate of Atlantic times. Archaeologists on the other hand have long been accustomed to regard the chalk as naturally free—or comparatively free—from vegetation, thus forming ideal areas of primary settlement for primitive people. A variety of evidence strongly favours the belief that in the Bronze Age the greater part of the chalk was of just this open character. So that if the ecologists are right the question that arises is to what extent a natural process of forest-reduction (brought about by the change-over to the sub-Boreal apparently in the third millennium B.C.) had advanced before Neolithic man arrived ; and how far Neolithic man himself initiated and promoted forest-clearing.

Tansley favours a combination of the two : a climatic impulse strengthened by the pastoral and agricultural activities of the Neolithic folk, whom he pictures as settled first of all in open ' islands ' on the more exposed ridges. This is a reasonable explanation ; but it makes the problem appear more simple than it really is. It may suit conditions on the chalk, although these long barrows by no

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means always occur on exposed ridges ; or on the Cotswold oolite, where however long cairns are often found in places which can and do today support a healthy woodland with large trees of ash and beech. But in Wales and apparently also in Scotland the Neolithic people cannot be described as people of the ridges without qualifications. The most conspicuous feature of their distribution is their preference for low-lying sites, many of which are sheltered in narrow valleys still richly wooded.² The relationship to sea-plain and valleys is obvious enough, but the evidence as a whole suggests that the tombs are sited in relation partly to water supply, partly to the presence of soils suitable for a primitive agriculture. To believe that these areas were naturally free from trees we should have to postulate the reduction of forest-limits by the Atlantic-sub-Boreal change-over to well below the present tree-line. Alternatively we must recognize that in the west and north Neolithic man did as a matter of habit make clearings in woodland for his tombs if not for his living sites.

Obviously what man could do in the valleys of Wales and Scotland he could do—*mutatis mutandis*—on the chalk and limestone downs. But lack of raw material in the form of the facts upon which to work not only handicaps any attempt to assess the varying parts played by man and nature in modifying these areas but also hinders the reconstruction of the pre-human conditions. Here there are no peat beds to supply scientific control by pollen-analysis, and we have therefore no way of confirming the existence in the past of the sequence which according to the ecologists can be demonstrated on some parts of the chalk at the present day, whereby ash-oakwood is succeeded by pure beechwood. The most hopeful way of accumulating any such facts is likely at present to be by archaeological excavation which will produce dated charcoals as well as parallel material (mollusca and the like) bearing upon climate and soils. But the accumulation will be a slow process, and interpretation will also be attended by difficulties which cannot be discussed here. This material is still too slight and too much scattered for use to have been made of it in the present book. But two pieces of evidence bearing on the history of the beech are already available as a result of it, and deserve mention because of the mystery which still attends the career of this species. Beech charcoals were found in a Neolithic context by Mrs Clifford in Nympsfield long cairn in the Cotswolds (*Proc. Prehistoric Soc.* 1938, 208) ; while at Radyr near Cardiff the identification by H. A. Hyde of beech amongst charcoals from a late prehistoric Iron Age hearth is strong presumptive evidence for the pre-Roman and therefore natural

² In Wales the best evidence is provided by the inland group of long cairns in the Black Mountains of Brecknockshire (*Arch. Camb.* 1936, 259-282) ; it is backed up by many individual sites. In Scotland Childe's Solway-Clyde Group of megaliths shows best the same features (*Prehist. Scotland*, Map 1, etc.).

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origin of the beech woods in southeast Wales (*Trans. Cardiff Naturalists' Society*, 1935, 46-54).

It is necessary to add one or two criticisms of purely archaeological matters. It is an open question whether the Cotswolds were as sparsely inhabited in the Bronze Age as has often been suggested (p. 166). Beakers and the beaker people were certainly there in some numbers; as elsewhere they seem to have settled down peacefully with the Neolithic folk. And there are plenty of round barrows, although little is known of them, and an abundance of flint implements of Bronze Age types. More important, because of their direct bearing upon the subject of the book, 'Celtic fields' do not receive adequate treatment. It may—or may not—be true that their chief period of cultivation was the Romano-British, as seems to be implied. But they were certainly in use at a much earlier date. The next sheet of the Celtic Earthworks map of Salisbury Plain shortly to be published by the Ordnance Survey emphasizes the fact that these fields are probably of varying periods; the earliest certainly go back at least to Late Bronze Age times. This early dating is however no new discovery: it has already been proved for some groups by the excavation of the associated farms and settlements. There is also some confusion of statement, if not of thought, about field-morphology: the remark (p. 172) that 'Celtic fields' are . . . 'strip-shaped or roughly square' suggests failure to distinguish between the chequer-board pattern normally assumed by 'Celtic fields' and the strip-lynchets developed by the cultivation system of Saxon (and medieval) farmers. Uneasiness on this point is increased by the fact that strip-lynchets are otherwise not mentioned. But the distinction is fundamental.

But in the end, while an archaeologist's review must necessarily deal with matters which come fully within his ken, his essential duty is done with an enthusiastic recommendation of this book to all archaeologists whose work involves any interest in environment. *The British Islands and their Vegetation* is in fact the indispensable accompaniment of all field surveys and environmental studies, and for this the archaeological and historical portions are less important than the rest. Throughout the work bears signs of a master hand; it is a tribute to Professor Tansley's skill and scholarship that the process of steeping oneself in it is as enjoyable as it should be profitable.

W. F. GRIMES.

THE ARTS IN PTOLEMAIC EGYPT. By IBRAHIM NOSHY. *Oxford University Press*, 1937. pp. 154 and 18 plates. 15s.

Late Egyptian art is generally accorded brief and only secondary treatment, for the Egyptologist as a rule is naturally more attracted by the period of the older Pharaohs, besides which he is not always sufficiently familiar with the principles of Greek art necessarily involved in a study of the later era. It is

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therefore a matter for congratulation that Mr Noshy, himself an Egyptian, has concluded his Egyptological studies in England with a work on the Ptolemaic period, such as has hitherto been entirely lacking. He has carefully collected all the multifarious material in connexion with the architecture of tombs, dwellings, and temples, as well as plastic evidence (statues, reliefs, miniatures and also coins), and has always kept in view these problems ; what is Greek, what Egyptian, and is there a synthesis of the two ? It is clear that on the whole the Egyptians remained true to their native forms of art, while the Greeks brought their own methods of building and their own art forms, and introduced them for their purposes into the land which they colonized. No deep-seated fusion of Greek and Egyptian ever took place, for the two cultures were fundamentally too unlike. So for example the attempt made by Petosiris in his tomb at Hermopolis to show Greeks in the Egyptian manner, while at the same time introducing scenes done after the Greek fashion, found no imitators (c. 300 B.C.). Here one misses a reference to the Sami Gabra excavation (not yet completed) of the tombs of Tunah, also near Hermopolis, where at a much later time we occasionally find Egyptian motives in Greek sepulchral architecture. It is of importance that the new temple buildings ordered by the Ptolemies and also by the Roman emperors entirely conform to the old Egyptian manner ; here the foreign rulers, with great wisdom and foresight, went their farthest to meet their native-born subjects. We can probably assume that in purely Hellenistic cities such as Alexandria or Ptolemais purely Greek temples also existed, but unfortunately no trace of any of them is left.

The book offers a welcome survey of the opposing artistic tendencies in Egypt in the age of the Ptolemies, which existed parallel for centuries without exercising any deep influence upon each other. It was not until the post-Christian era that Egyptian art began quickly to decline, after which the Greeks retained the upper hand until the Arab invaders came.

A. SCHARFF.

S.A.

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The Treasury of Atreus*

by A. B. WACE

THE Treasury of Atreus is one of the most important monuments of the Bronze Age in Greece and is universally recognized as the supreme example of Mycenaean architecture. It is also the finest of all the many beehive or tholos tombs which are such a striking feature of Mycenaean culture. The beehive-tomb is essentially a creation of the architecture of the Greek mainland and of Mycenaean as opposed to Minoan building. In Crete so far three beehive-tombs of Bronze Age date are known, two of which—one at Hagios Theodoros and another just found at Knossos—date from late L.M. III, the very end of the Bronze Age. The third, found at Knossos in 1938, is not to be dated earlier than 1500 B.C. All three are small and poorly constructed. The Early Bronze Age circular ossuaries of Mesarà in Crete, often erroneously described as beehive-tombs, are, as Professor Marinatos has proved, nothing of the kind. On the other hand, on the Greek Mainland and in the islands immediately adjacent to it, at least forty beehive-tombs are so far known. These figures are enough to indicate that the beehive-tomb is a product of Mainland or Mycenaean rather than of Cretan or

*The nine beehive tombs of Mycenae are described in the *Annual of the British School at Athens*, xxv, 283 ff., and the Treasury of Atreus specifically on pp. 338-57 of that volume. Further points in connexion with them are discussed in the *Journal of Hellenic Studies* 1926, p. 110 ff., and in Persson, *Royal Tombs at Dendra*, p. 140 ff.

The theories of Sir Arthur Evans on the beehive-tombs and the Treasury of Atreus are in his *Palace of Minos*, III, p. 201, and IV, 244, and in his *Shaft Graves and Beehive Tombs*, p. 67 ff., especially pp. 76-77, and 92. Professor Myres' views will be found in his *Who were the Greeks?*, pp. 282-4, 381-2, 574.

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Minoan architecture. More accurate information about the date and construction of the Treasury of Atreus, the finest of all the beehive-tombs, cannot fail to enlarge our knowledge of the history and art of the Mycenaean civilization.

In the British excavations at Mycenae in 1920-1923 study of the Treasury of Atreus with these objects in view was begun. Apart from the making of a fresh plan (FIG. 1), attention was directed to an examination of the threshold and of the walls of the dromos or entrance passage. The threshold which lies across the centre of the doorway is constructed on the wedge-principle, as were the thresholds of the other two beehive-tombs of Mycenae, which belong like it to the third or most advanced group, and also that of the Treasury of Minyas at Orchomenos which strongly resembles the Treasury of Atreus in structure. At each end of the threshold against the door-jambs, or rather against the massive sides of the doorway, is a great block of conglomerate. These are set close to the jambs and their inner edges are cut obliquely, thus leaving a small triangular or wedge-shaped gap between them. This gap is filled by two wedges of *poros*, soft limestone—one thin, the other thick. The thicker wedge was driven in first and then the thin one, thus forcing the two conglomerate blocks tight against the door-jambs and making the whole threshold secure. The use of *poros* (see PLATE IV), in this manner, for which it is far better suited by its nature than conglomerate, is not unusual in Mycenaean architecture. In the Tomb of Genii, for instance, the relieving triangle over the lintel is closed with blocks of *poros*, the uppermost of which at the apex of the triangle was cut wedge-fashion and thrust in so as to form a kind of keystone to the whole. The use of two kinds of stone in the threshold would not be noticeable, because when the wooden door frame was inserted between the jambs the stone threshold was covered with bronze or wood as described by Homer. In the excavation the wedges of *poros* were removed and the southern threshold block lifted. Underneath it were found some beads of stone and paste, fragments of gold leaf, bronze, and ivory bronze nails, and three potsherds of good Late Helladic III date, probably of the mid-fourteenth century B.C.

In the dromos a trench was dug across it about five metres from its entrance, between two large conglomerate blocks which there form the base of the northern and southern walls. These blocks, of which the northern one is cut like a lintel, span a pocket in the rock through which the dromos was excavated. The pocket was filled up to the level of the clay floor of the dromos with the broken and powdered rock dug

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out during the excavation of the dromos. Its northern and southern ends on the lines of the dromos walls are spanned by these two great blocks of conglomerate, which serve as sure foundations for the upper courses of the walls themselves. The use of these lintel-like blocks in such a position and for such a purpose, where a modern architect would use a steel girder, accords with correct architectural practice. In the powdered and broken rock-filling of this pocket many potsherds were found and also a fragment of a terracotta figurine.

All these date from the beginning of the Late Helladic III period, not later than the middle of the fourteenth century B.C. These would have been thrown into the rock-pocket with the powdered and broken rock from the excavation of the dromos, and are thus not later in date than the construction of the tomb. As they are all of the L.H. III period, not later than about 1350 B.C., this is a *terminus ante quem* for the tomb. The date thus arrived at agrees with the evidence obtained from under the threshold. In the report of the excavations the tomb and its companions of the third group of beehive-tombs were accordingly dated to the fourteenth century B.C. This date harmonized with that arrived at by a study of the gradual advance in architecture shown by the three groups of beehive-tombs, a logical and natural evolution. By these means a date for the Treasury of Atreus was obtained which agreed admirably with those independently determined for other buildings at Mycenae, such as the Palace and houses within the Cyclopean walls, and also with the dating by Professor Kurt Müller of the Palace at Tiryns. These results were accepted by most of the scholars who have devoted themselves to Aegean archaeology. Sir Arthur Evans and Professor J. L. Myres, however, have raised objections to them.

There seems to be abroad a theory that all great works of art of the Bronze Age in Greece depend for their inspiration entirely on Minoan Crete, and consequently that they must precede the destruction of Knossos and the Cretan palaces about 1400 B.C. With this underlying idea attempts have been made to show that the Treasury of Atreus, the most perfect structurally of the beehive-tombs, is the earliest, is purely Minoan, and should, therefore, be dated to the close of the Middle Bronze Age in the late seventeenth century, the great building epoch at Knossos and Phaistos. Study of the beehive-tombs of Mycenae in the excavations of 1920-1923 showed that they can be classified, according to their structure, in three groups. The first group is characterized by rubble masonry, the second by ashlar masonry in soft stone, and the third by ashlar masonry in hard stone. There

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are other architectural details in the lintels, the relieving triangles, the construction of the jambs, and the proportions of the dromos which suggest that there was a steady advance in construction from the first group through the second to the third. Further, the pottery and other objects found in them indicated that the third group was the latest and the first group the earliest. These results agreed with the view that the tombs more elementary in structure are older than those more advanced. This leads to the corollary—that ashlar masonry, an advanced type, is later than rubble masonry, which is obviously more primitive in character. Sir Arthur Evans, however, maintains that the structural evidence can be read both ways and that the finest beehive-tombs should come first, and the primitive at the end of the series as degenerate and decadent. This reverses the natural order of steady improvement and would imply that the arts gradually declined rather than advanced, and that ashlar masonry would have preceded rubble. A certain example to the contrary is to be seen in the tomb of Aegisthus (Mycenae) where the outer façade is of ashlar, and the inner façade, the doorway, and beehive are of rubble masonry. It would have been physically impossible to build the ashlar outer façade before the inner façade and beehive. The theory then of decline (that is of *dimuendo* rather than of *crescendo*) becomes highly improbable.

It is also contrary to human experience and to anthropological principles that the earliest example of any work demanding proficient skill should be the best. Man usually achieves his best results by practice which proverbially makes perfect. It would be more natural for the Treasury of Atreus, as the finest example of the beehive-tomb, to come at the culmination rather than at the inception of the series. As many poets must have preceded Homer, so many beehive-tombs must have been built before the days of the great architect who planned and constructed the Treasury of Atreus, or Tomb of Agamemnon as it is known locally. *Vixere fortes ante Agamemnona multi* in very truth.

Sir Arthur Evans and Professor Myres concentrate their attack on the Treasury of Atreus on two main points, the threshold and the dromos walls, because underneath them Late Helladic III, fourteenth century, pottery was found. Their *a priori* belief is that the tomb must be Cretan in inspiration and so date from the seventeenth century. Thus they argue that because Late Helladic III pottery (too late to fit their date for the tomb) was found beneath the threshold and the dromos walls, these must be later than the dome to have been damaged and repaired. Ignored is the principle of the wedge-construction of

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the threshold which is described as broken and restored. Yet this very wedge-principle is the only correct architectural method for inserting a threshold tightly between previously constructed solid jambs such as those of the Treasury of Atreus. The same principle was followed in inserting the sills in the Parthenon, which has not yet been described as degenerate or decadent. It is also found on the Palatine in buildings of the Flavian period, the period which produced the Colosseum.

The use of two kinds of stone is also considered a sign of decline or incompetence. The combining of *poros*, however, with conglomerate which, though admirable for solid and massive structures, is not, from its very character, well adapted for use for wedges, finds an analogy in classical Greek architecture in the Temple of Apollo Patroos in the Agora at Athens. In this fourth century building blocks of *poros* were let into the conglomerate foundation blocks because the latter material was not homogeneous enough to hold the dowels firmly, whereas the consistent nature of *poros* enabled the dowels to be fitted tightly and accurately. In these two cases Mycenaean builders can be seen to have employed methods practised by architects at the zenith of Athenian architectural achievement.

Sir Arthur Evans and Professor Myres allege that the dromos walls also have been subject to restoration. The former asserts that 'it must be regarded as archaeologically proven that the dromos walls in their existing form do not represent the original construction'. The latter believes that the façade of the tomb was originally wider because he thinks the dromos walls do not bond with it and that the dromos walls have been moved inwards.

This theory that the dromos walls were moved and rebuilt sounds almost fantastic. The dromos walls are about nineteen metres long and at the façade about ten metres high, and these dimensions give a cubic content of at least six hundred cubic metres of masonry, or a weight of over twelve hundred tons, and no one familiar with the huge conglomerate blocks of these noble walls would dream of suggesting that the Mycenaean, who were a practical people, would have undertaken the gigantic task of moving that mass of masonry a few centimetres. The time and labour of taking down and re-erecting this quantity of material without damage in so confined a space would be enormous and quite purposeless. Further, as will be seen below, there is indisputable evidence from the 1939 excavations that the dromos could never have been any wider.

One of the main objects of the Mycenae excavations of 1939 was

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the continuation of the study¹ of the Treasury of Atreus, especially as regards the dromos walls. Tests were dug at each end of the façade to see whether it ran behind the western ends of the dromos walls (FIG. 1). It was found that the width of the façade is equal to the distance between the west ends of the dromos walls and further that there is in fact an elementary bonding of the dromos walls with the façade, especially in the case of the southern wall (PLATE 1). So as far as the façade is concerned the dromos cannot have been wider, and the existence of bonding between the dromos walls and the façade suggests simultaneous construction, or at least that both were parts of one uniform design.

Tests dug across the eastern ends of the dromos walls and behind the southern dromos wall at a point fifteen metres from the façade revealed the details of their construction (FIG. 1). They are built in ashlar, with massive blocks of conglomerate bonded behind with rough limestone blocks, built up with the tough yellow clay used by the Mycenaeans as mortar, and dug from beds at Plesia about twenty minutes on foot southwards from Mycenae. The wall varies in thickness from 2 metres at the eastern end or entrance of the dromos, and fifteen metres from the façade to three metres or more at a point ten metres from the façade and by the façade itself. As the dromos walls gradually rise in height from 0.50 metre at the entrance or east end to 10 metres at the west end by the façade, it is perfectly natural that they should correspondingly increase in thickness. At the west end by the façade they have to support both the pressure from the ground behind them and also some thrust from the façade itself. Thus it was absolutely necessary that the dromos walls should be broad and strong, for unless they had been so built they would have been endangered by their own height, as they neared the façade. The Mycenaean architects' constant aim was strength, and in this case it was well achieved, as testified by the wonderful preservation of the walls after exposure to the ravages of over thirty centuries. Behind the main wall is a backing of crude brick of the same yellow clay which varies from 2.50 metres to 4 metres wide. The object of this clay-brick backing is clearly to keep the walls watertight, that is to prevent water collecting behind them or seeping through them. Should that happen the stability of the walls would be endangered, for the water would press the walls inwards into the dromos.

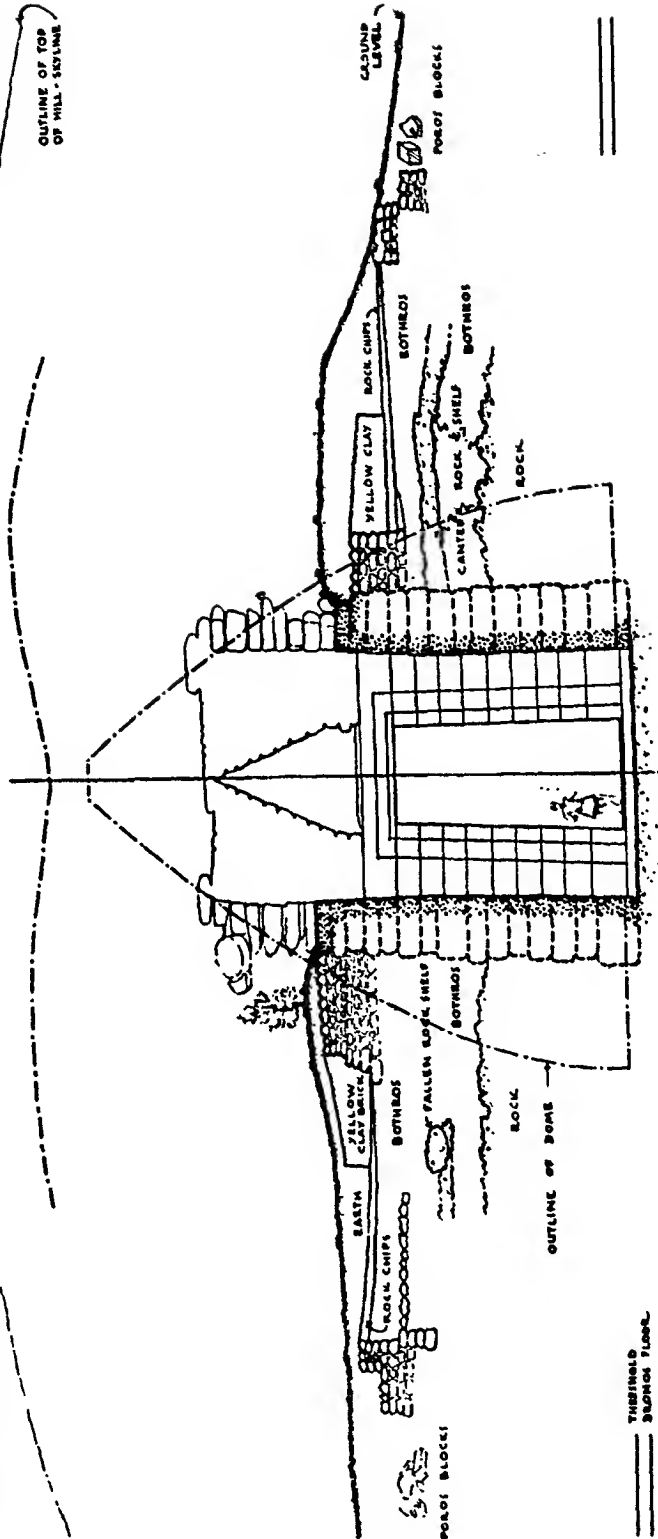
¹ In this we had the valuable collaboration of Mr Arnold Silcock, an architect, to whose skill the plans and sections are due. The excavation work at the Treasury of Atreus was supervised by Miss Helen Thomas.

TREASURY OF ATREUS MYCENAE

MATERIALS
CONGLOMERATE
ROUGH STONE
EARTH
ROCK

2000
1800
1600
1400

OUTLINE OF TOP
OF HILL - SECTLINE



CROSS SECTION G.H.
THROUGH DROMOS

SCALE 0 5 10 15 METRES

FIG. 1

Amel Seid
MYCENAE 1979

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This has actually happened to the dromos of the Tomb of Clytemnestra since its excavation. Water behind the eastern wall of that dromos has caused it to incline inwards in a threatening manner, and it has had to be strutted throughout with heavy baulks of timber by the Greek archaeological service. The waterproofing of the backs of the dromos walls of the Treasury of Atreus has had the effect aimed at by its architect, for the walls still stand true and vertical and there are no signs of any seepage or damage by water.

At a point fifteen metres from the façade behind the southern wall the clay-brick backing rests on the surface of the rock, which is cut away vertically to the north, directly behind the main wall of limestone and conglomerate (PLATE II). The wall is built directly against the cut rock-face, proving indisputably that the dromos can never have been wider. Some of the conglomerate blocks, which seem to be more often laid headerwise than stretcherwise, run right back through the thickness of the masonry wall and thus demonstrate that the wall is one simultaneous construction. Needless to say there is no sign of the wall having been restored or moved.

Further tests were dug behind both the northern and southern walls at a point ten metres from the façade (FIG. 2). Here the construction of the wall followed in the main the principles already observed, but with variations. Underneath the clay-brick backing lies a layer of chipped and powdered rock similar in character to the powdered and broken rock found in the pocket beneath the dromos floor in 1921 as described above. This, which varies in thickness from 0.10 metre to 0.30 metre, runs under the rough limestone portion of the main dromos walls, and overlies on both the northern and southern sides a deep deposit of refuse lying in a rock-cleft similar to that beneath the dromos floor between the two huge lintel-like blocks in the walls. The deposit, which consists of broken pottery, animal bones, shells, fragments of painted stucco, and terracotta figurines, underlies the limestone portion of the main walls. The sherds of broken pottery can be counted by the thousand, and most of the sherds of plain unpainted ware seem to belong to household vessels. The shells are those of oysters and other edible shellfish. The bones, which have nearly all been split for the extraction of the marrow, are mainly those of domestic animals, sheep, goat, pig, and ox. The painted stucco includes pieces of circular altars or tables of offering. The deposit is clearly domestic in character. It is reasonable to assume that it would not have been brought up the hillside, but rather have been thrown down it. On the



TREASURY OF ATREUS, SOUTH SIDE (see p. 238)



FIGURE 1. THE ROCK OF THE CONGLOMERATE FACE (see text)



(1) TREASURY OF ATREUS. A GOOD EXAMPLE OF THREE-LEGGED
COOKING POTS (see p. 245)



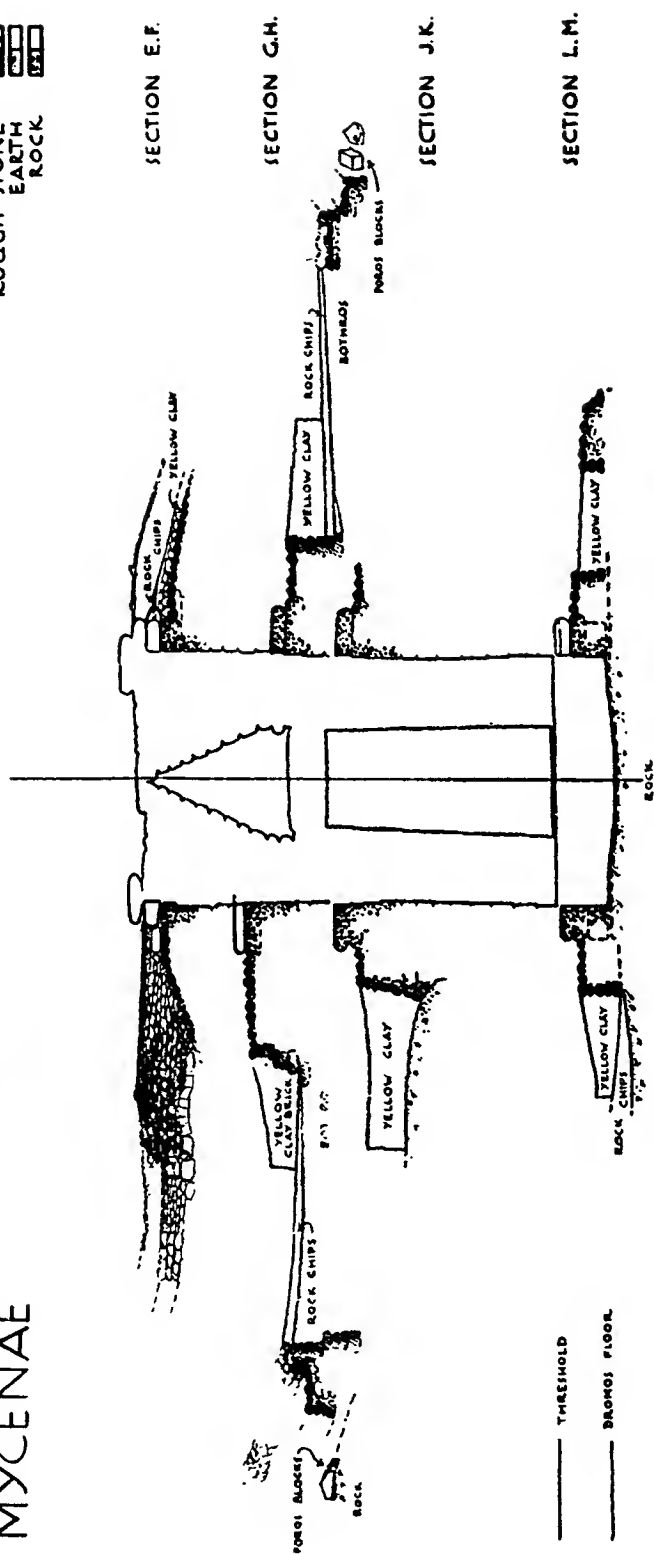
(2) SPIRAL PATTERNS ON VASES FROM BOTHROS DEPOSIT C, 1400 B.C. (see p. 245)

PLATE IV



TREASURY OF ATRIUS. POROS BLOCKS FROM DESTROYED BUILDING FOUND BELOW RETAINING WALL TO SOUTH OF DOMI. AND DROMOS (see p. 248)

MATERIALS
CONGLOMERATE
ROUGH STONE
EARTH
ROCK



CROSS SECTIONS THROUGH DROMOS

A vertical scale bar with the word 'SCALE' at the bottom and 'METRES' at the top. It has tick marks at 0, 5, 10, and 15.

FIG. 2

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MYCENAE 1939

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top of the ridge above the Treasury of Atreus Steffen marked the remains of ' Cyclopean ' buildings which can still be observed. Trial trenches were accordingly dug at one or two points on the ridge top, and they brought to light the foundations of well-built Mycenaean walls and a quantity of pottery of good fabric which in general agrees with that from the deposit found behind the dromos walls of the Treasury lower down. It seems probable therefore that on the top of the ridge there once stood a number of good Mycenaean houses, and that the natural cleft in the rock, where the Treasury of Atreus was afterwards built, was used by their inhabitants as a suitable and convenient place to dump their household refuse. A somewhat similar dump of pottery and other refuse was found in the excavations of 1921, in a pocket in the rock a little to the north of the Treasury of Atreus. Its contents agree well in character and date with that from the corresponding deposit at the Treasury of Atreus. The houses that stood on the ridge, to judge by their structure and the pottery and other remains from them, must have formed a good, well-to-do residential quarter, the first so far found outside the citadel walls of Mycenae. To this quarter probably belonged the chamber-tombs found by Tsountas on the west side of the ridge and also those on the east side of the ridge, the Third Kilometre Cemetery. These chamber-tombs include some of the finest and largest at Mycenae and in the same area lie two beehive-tombs, the Panagia Tomb and the Treasury of Atreus. These considerations confirm the impression already derived from a study of the structure of the houses and their contents. The excavation of this important area, had, however, to be left for a future occasion. It may be noted that on the hill surface one or two fragments of stone vases were found.

The stratification of the deposit in the rock-cleft behind and under the dromos walls at this point, ten metres from the façade, indicates that the dromos must have been cut through the deposit, and sherds from the same vases found both north and south of the dromos walls show that the deposit in the rock-cleft is all one. When the open cut or gallery for the dromos of the Treasury of Atreus was dug into the hillside it was excavated in the rock and thus driven straight through the rock-cleft of refuse (cf. FIG. 2). When this was being done the broken and powdered rock from the excavation was thrown out right and left over the surface, and thus the powdered rock overlying the deposit of household refuse in the rock-cleft cut through by the dromos proves that that deposit precedes in date the excavation for the tomb. The

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evidence for the date of that deposit, which is of fundamental importance for the date of the tomb, will be discussed below.

The layer of powdered and broken rock runs back from the rear of the dromos walls for about 6.50 metres and stops against retaining walls which run up the hill obliquely north and south of the tomb. These walls are strongly, though roughly, built of rude limestone blocks. They are founded on the rock and are broader at the base than at the top. As they run obliquely on either side of the dromos up the hillside they so to speak flank the base of the dome, and the northern one was traced to a point northwest of the centre of the dome. They thus retain the base of the mound of earth which covers the apex of the dome, and by weighting it in this manner supply the load necessary to keep the apex and upper courses of the vault in their correct position. The dome is built at its base as a kind of cylinder in a circular excavation in the rock approached by a horizontal open gallery, the dromos. Up to the point where it emerges from the rock the dome is supported all round by it, which forms a kind of continuous natural buttress and counteracts the thrust of the upper part of the vault. Above the point where the dome rises above the rock and curves inwards towards its apex the masonry has no external natural support and so the architect weighted it with a mass of earth to give the pressure necessary to prevent any movement of the stonework. This mass of earth is protected from erosion by the retaining walls on either side which secure its base. In Messenia Dr Valmin noted the existence of somewhat similar retaining walls round the bases of the artificial mounds covering beehive-tombs.

The layer of powdered rock was found everywhere running from the tomb and dromos up against the top of the retaining walls, and on the south side at one place it was found to include chips of conglomerate, one at least from a sawn block. These chips obviously come from the dressing of the conglomerate blocks of the tomb, as they were being placed in position, and make it more than ever certain that the layer of powdered rock is contemporary with the construction of the tomb.

On the north side, at a point 10 to 15 metres due north of the inner or west end of the doorway of the Treasury, the layer of powdered rock was found to overlie the remains of two earlier walls which had a rock cutting between them. Here lay the remains of decomposed crude brick and much broken pottery, some fragments of frescoes, and a few terracotta figurines. The general character of this deposit, so far as date is concerned, agrees with that of the great deposit in the rock-cleft behind the dromos walls. This is clear evidence that some earlier

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building stood on part of the site and was probably removed to make way for the tomb.

A consideration of the purely archaeological and stratigraphic results of the investigations of the dromos walls and façade gives the following fixed points :

A The dromos was never any wider because the façade is only as wide as the dromos itself and the dromos walls are built against the rock.

B The deposit of household refuse found in the rock-cleft north and south of the dromos walls was cut through by the builders of the tomb when they excavated the dromos. This is clearly seen in the section (FIG. 2).

C The powdered and broken rock found in the rock-pocket near the entrance to the dromos, between the two large lintel-like blocks and the layer of rock chips running down to the tops of the retaining walls on either side of the dromos over the deposit of household refuse in the rock-cleft ten metres from the façade, and over the earlier walls north of the doorway, were obviously produced by the excavation of the tomb and are contemporary with its construction. Since the layer of rock chips lies north of the doorway as well as on either side of the dromos and is clearly one homogeneous layer, it shows that dromos and dome were constructed simultaneously.

D The pottery in the deposits of household refuse, that in the rock-cleft north and south of the dromos, and that between the earlier walls north of the doorway together with the other objects in those deposits, terracotta figurines and fresco fragments, therefore undoubtedly antedates the construction of the tomb.

The evidence of the 1939 excavations demonstrates that there is no sign of any reconstruction or restoration of the tomb or of the moving of the dromos walls, but that the dromos and dome were built together as one uniform plan and design.

Further it is obvious that the date of the latest pottery in the deposits mentioned gives a fixed date which must precede the building of the tomb.

The terracotta figurines found in those deposits are of the same types, human and animal, as the ordinary Mycenaean terracotta figurines which so far have never been found in any deposits earlier than the beginning of Late Helladic III, the fourteenth century B.C.

The fresco fragments include pieces with large striated foliage

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designs in blue, black, and red on a white ground, not unlike some from the Ramp House deposit at Mycenae, which Evans compares to examples from Knossos and dates to the closing stage of the Palace Period at the end of L.M. II, the last years of the fifteenth century B.C.

The pottery divides roughly into two main groups, the painted and the unpainted. The latter includes plentiful fragments of small cups and bowls of pale yellow buff ware, and a great number of pieces of domestic vessels of red earthenware, among which storage jars of various sizes and three-legged cooking pots are prominent. A good example of the last type was found in 1939 in a trial trench on the ridge immediately southeast of the Epáno Phournos beehive-tomb where the walls of a L.H. III house were found (PLATE III, 1). Among the painted fragments were a great number of pieces with stippled decoration in reddish, red brown, or dark brown paint, and the two most noticeable shapes are the open tea cup and the mug or tankard. There were many varieties of spiral patterns, but of a late (L.H. III) rather than an early (L.H. I-II) type. Among other shapes the alabastron (PLATE III, 2) is prominent, though no complete or nearly complete example has yet been put together. The patterns are mainly of the usual wave-type on the sides, but on the bases the only pattern that occurs is that of concentric circles. This latter pattern first occurs on the bases of alabastra towards the end of L.H. II and is characteristic of L.H. III alabastra. A fragment of a rhyton or filler of the funnel-shaped type is decorated with thick and thin bands in reddish orange-brown paint, and resembles rhyton fragments from Tell el Amarna and from Tell Abu Hawam in the Museum of Classical Archaeology at Cambridge. From fragments most of two vases could be put together. One is a mug or tankard of the usual type which became popular at the end of L.H. II and flourished in L.H. III. It is decorated with the scale or net pattern which, though it appears in L.H. I and II, only really came into favour in the succeeding period. The other vase is a piriform jar with three vertical ribbon handles on its shoulders. It has thin and thick bands of reddish brown paint on the lower part of the body and the upper part displays a floral motive of a crocus, iris bud, or palm type. This shape of amphora with vertical ribbon handles is earlier than the similar shape with horizontal loop handles, and occurs down to the first stage of L.H. III. The floral pattern resembles distantly one of the favourite patterns of Ephyrean goblets, and is known on amphorae of much the same form found by Blegen at the Argive Heraeum and dated by him to L.H. III.

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Among the pottery too there are a few pieces of L.H. I and of earlier L.H. II style and one or two pieces of rather coarse Palace Style amphorae. On the other hand it is noticeable that the later L.H. III pottery is conspicuous by its absence, and that the kylix is rare. The most striking feature of the pottery is its uniformity. It may be said to belong almost entirely to the latter part of L.H. II and to the early part of L.H. III, and there is nothing that could be definitely classed as later than the Tell el Amarna style. This deposit in its general character, as stated above, resembles that found in 1921 a little to the north of the Treasury of Atreus which included pieces of stippled ware, alabastra fragments, terracotta figurines, and one or two kylix fragments. It resembles also the deposit found in 1921 below the Ramp House. In that were terracotta figurines, fresco fragments with striated foliage in blue, black and red on white, and among the pottery many pieces of stippled ware, especially of mugs or tankards, and some characteristic early L.H. III sherds. The Ramp House deposit was specially noted as belonging to the beginning of the L.H. III period and contemporary approximately with the pottery from the dromos of Tomb 505.

The net result of this brief survey of the deposits underlying the layer of rock-chips, that in the rock-cleft cut through by the dromos of the Treasury of Atreus, and that between the earlier walls north of the doorway, is that in the main they belong to the latter part of L.H. II or the beginning of L.H. III, and since there is nothing that appears to be later in style than the pottery from Tell el Amarna the range of the bulk of the deposit can be dated to 1450-1350 B.C. Since, as already seen, this deposit obviously antedates the construction of the Treasury of Atreus, it inevitably follows that the Treasury was not constructed before 1350 B.C. This dating agrees with that arrived at from the excavations of 1920-1923, and since the 1939 dating is based, not on a small quantity of material, but on thousands of fragments of pottery, and is supported by absolutely clear stratigraphic evidence, it may be taken as proved that the Treasury of Atreus was constructed in the fourteenth century B.C., not earlier than 1350 B.C.

To this fixing of the date of the Treasury of Atreus other conclusions logically succeeded. This date confirms the view previously arrived at by a study of the architectural development of the beehive-tombs that they are structurally to be arranged in three groups, and that the third or most advanced group, to which the Treasury of Atreus belongs, is to be dated to the fourteenth century B.C. The tomb of Genii, the first tomb of that group, may be dated to 1400 B.C., or soon

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after ; the Treasury of Atreus to 1350 B.C., or a little later ; and the latest, the Tomb of Clytemnestra, to about 1300 B.C. Of the other two groups of beehive-tombs the first can be assigned to about 1510 to 1460 B.C., and the second group to about 1460 to 1400 B.C. Thus the age of ashlar work in *poros* or soft stone, so characteristic of the second group, falls in the fifteenth century, and that of ashlar work in hard stone or conglomerate, the feature of the third group, in the fourteenth century.

The next conclusion that follows is that the theories of Professor Percy Gardner and Sir Arthur Evans, that the contents of the Shaft Graves (except the Sixth Grave) represent the contents of the beehive-tombs transferred thither at a later date for safety after the Cyclopean walls were built, are untenable and fallacious. The contents of the Shaft Graves are to be dated to L.H. I (c. 1600–1500 B.C.); it is obvious that a beehive-tomb not built before 1350 B.C. could not have had a purely L.H. I contents. If the contents of the Treasury of Atreus built about 1350 B.C. had been transferred to the Shaft Graves, there should have been L.H. III objects in the Shaft Graves. The Shaft Graves are part of the Prehistoric Cemetery used from Middle Helladic times to the end of Late Helladic II (i.e., from about 2000 to 1400 B.C.), when it was cut through by the building of the Cyclopean fortification wall of the citadel. Then the Grave Circle was constructed to protect the sacred royal Shaft Graves as a hallowed area. This was confirmed in 1939 also by the discovery of part of the Prehistoric Cemetery outside the Cyclopean walls west of the Lion Gate. One of the tombs found there was a shaft grave of late sixteenth century date. At any rate the positive and cumulative effect of the evidence derived from the excavation and study of the monuments of Mycenae, strengthened now by the results of the excavations of 1939, puts completely out of court the 'transference' theory about the contents of the Shaft Graves and its attendant theories about the dating of the beehive-tombs and the 'restoration' of the Treasury of Atreus. The vital importance of the date of the Treasury of Atreus for this is indicated by the attempts of Sir Arthur Evans and Professor J. L. Myres to explain away the archaeological facts derived from excavation and their theory that the dromos walls have been restored or moved. With the new evidence both stratigraphic and ceramic which confirms that date of the Treasury of Atreus to about 1350 B.C., the base of this house of cards of hypothesis is knocked away completely.

One other discovery made in 1939 supports the fourteenth century

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date of the Treasury of Atreus. Directly below the oblique retaining walls on either side of the dromos and dome a large number of worked blocks of *poros* (soft limestone) were found. They lay in complete disorder as if they had been dragged down the hillside and thrown over the top of the wall higgledy-piggledy (PLATE IV). These blocks are of two types, one roughly triangular in plan with a dressed face and rough sides and tapering towards the back, and the other roughly triangular in section and almost of a pedimental shape. Many of the first type have clamp holes in their upper surfaces, and seem to have been cut for the faces of a double-faced wall, the interior of which was composed of rubble work set with clay, somewhat like the west wall of the Palace at Knossos or the north wall of the court of the Mycenae Palace. Wooden clamps in the clamp-holes mentioned would have held the wall together and kept the faces vertical, as in the two cases quoted and in the upright slabs of the Grave Circle. The positions of the clamp-holes show that the joints of the wall were 'broken', a sign of correct construction. The blocks of the second type, which are longer and wider than the others, seem to have been designed as coping blocks to cover a wall built with two faces as just described. Blocks of both types were used for the blocking wall across the east end of the dromos and at the east ends of the dromos walls. In these walls the blocks are clearly not in their original positions, but are re-used, for the clamp-holes there have no purpose. Three blocks of the pedimental type have long lain near the entrance to the dromos, but where, when, or how they were found is not known. In any case the re-use of some of the *poros* blocks in the blocking wall at the entrance of the dromos, and at the end of the dromos walls suggests that they came from some building that preceded the tomb. This is confirmed by the positions in which the blocks found in 1939 were discovered. They lay in complete disorder thrown over the edges of the retaining walls. They would appear to have been removed from some building that stood where the dome of the Treasury was erected, and was destroyed to make way for it. The *poros* blocks from it were then thrown away as useless material because hard, not soft, stone was required for the Treasury of Atreus. The *poros* comes from quarries on the hill called Magoula at Priphtani, about thirty minutes' walk south of Mycenae, where there are traces of Mycenaean habitation and a cemetery of chamber tombs. The cutting on the blocks is so fresh that they cannot have been long exposed to the weather, and so the building to which they belonged cannot have been long in existence before it was destroyed. The age of ashlar work in

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poros in the beehive-tombs is the second group which dates from the fifteenth century. Thus the suggestion that these *poros* blocks belonged to some building of the fifteenth century, removed to make room for the Treasury, agrees with the fourteenth century date determined for the construction of the tomb. What that building was may be revealed when the excavations are continued. The wall from which the *poros* blocks came may have been a monumental wall surrounding the court of a great house or palace, like the court wall of Odysseus' palace in Homer, or perhaps the enclosing wall of a temenos or shrine.

This and other points will undoubtedly be elucidated by the continuation of the excavations when the time comes. Still it seems clear that the excavations of 1939 have been conclusive as regards the date of the Treasury of Atreus, and very beneficial in clearing away much of the smoke screen of theory which has been allowed to obscure our knowledge of the history of Mycenaean culture. It is indeed fitting that the Treasury of Atreus, one of the greatest architectural monuments of Greece, should prove the decisive factor, but in all research about its construction, its date, or its place in the evolution of Mycenaean civilization, its wonderful artistry should not be overlooked. That unknown master of the Bronze Age who conceived and created it was as bold a designer and as able an engineer as any great architect of historic times. His artistic instinct planned the perfect proportions. His engineering skill calculated thrusts and stresses and how to counteract them, and with his knowledge of materials brought the great design to triumphant completion. Archaeology here leads us to a fuller appreciation of a true artist.

Roses in Antiquity

by W. L. CARTER

ONE of the many pitfalls encountered in the search for evidence of roses in ancient times is the use of the word 'rose' in connexion with flowers having no association whatever with roses, e.g. the Rose of Jericho and the Rose of Sharon. This is particularly true of references in the Old Testament, although some of them, notably in Ecclesiasticus, Wisdom of Solomon and Esdras, undoubtedly refer to the rose and rose bushes. Wild roses flourish in Palestine, an attractive type being *Rosa phoenicea*, whose clusters of creamy-white bloom are sufficiently striking to invite attention. This rose would be known to the ancients, for it is found scattered in numerous localities in the Troad and Syria. It is, of course, impossible to record with reasonable certainty the full tale of roses with which the ancient world was familiar, but sufficient sources of information remain to enable a fair appraisal to be made. Some of the roses have stayed in cultivation down the centuries, and are still grown in gardens. Others, such as the 'twice-blooming' roses of Paestum, have vanished, and an exact description is impossible.

The oldest known rose is *Rosa centifolia*, the 'hundred-leaved' rose of ancient writers. It is the Cabbage rose of cottage gardens, whose large silvery-pink blooms are full of petals. This rose is strongly, if delicately, fragrant with a sweet perfume, and is usually adopted as the standard by which all scented roses are classified. It flourished in the earliest recorded rose garden—that of Midas, son of Gordias, the first known patron of the rose. Herodotus says that in this garden were 'roses which grew of themselves, so sweet that no others can come near them, and with blooms that have as many as sixty petals apiece'. The garden of Midas was famous throughout the classical world and must have been a place of astonishing beauty, for we find Tertullian describing an earthly paradise as finer than the orchards of Alcinous and the rose garden of Midas. *R. centifolia* was one of the very few naturally occurring double flowers grown in ancient gardens. Midas's

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rose garden would seem to have been flourishing in the time of Herodotus, who probably visited it. It was reputed as being within sight of Mount Olympus, and over some years I made several visits to the site in an endeavour to ascertain whether any survivals of ancient flowers were still in existence. There was no trace of *R. centifolia*, but two interesting wild roses flourished near the legendary site. One was an attractive low-growing bush resembling a hybrid of the Burnet rose of Scottish shores and sandhills. It was a tangle of spiny shoots bearing many little double creamy flowers. The second was a dwarf bush with small semi-single white blooms having a sweet fragrance, possibly an Alba hybrid. A local form of the dog rose with fairly large bright pink single blooms intertwined its trails within a thicket of thorny bushes. Probably this is the 'Cynosbatus' rose of early writers.

R. centifolia was well known in the district around Philippi, where Theophrastus saw it growing. Pliny says this rose grew 'wild' in Campania, and he goes so far as to identify the flowers with those mentioned by Theophrastus. However, the Roman seems to base his notes on those of the earlier Greek, although the pair differ as to the average number of petals in the flower of the Cabbage rose, the Greek giving one hundred—hence the name *centifolia*—with Pliny contenting himself with sixty. *R. centifolia* is not the ancient rose of Campania, which is described as an early-flowering type and ranking equal in beauty with the late-blooming roses of Praeneste. There has been endless speculation as to the origin of *R. centifolia* but entirely without convincing result, the advocates of the garden-origin theory being unable to disturb the upholders of its acceptance as a true wild rose, whose original habitat lay in the Caucasus. The Moss rose, really *R. centifolia* var. *muscosa*, is of comparatively recent occurrence, and originated about the opening of the 18th century.

One of the puzzling problems of ancient roses is that of the flowers mentioned by Sappho of Lesbos. Her reference 2500 years ago to roses that 'lifted themselves up' is curious, for none of the recorded roses of the ancients would do this, except perhaps one or two of the single-flowered species, and these would hardly attract the attention of one of Sappho's standing. Such roses as *R. centifolia* are loose bushes with shoots that arch beneath the weight of individual blooms, and the stems bearing these heavy flowers are what is today called 'weak-necked'. The Sappho roses were distinct from anything hitherto recorded. They were strongly fragrant, and it seems likely

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they were a lost form of the Damask or Gallica rose. Or perhaps they were a local Eastern Mediterranean form of *R. alba*, some of whose oldest surviving hybrids are upright bushes bearing some of the most fragrant roses now found in gardens. No ancient roses flourish today on modern Mitylene, Sappho's Lesbos, although many newer kinds thrive so well there that one cannot doubt the island must have been a congenial home to the roses Sappho saw growing there.

The roses of ancient Egypt were not more than two in number, and possibly only one. There is ample evidence to show the importance of the garden in Egypt—the 'Gardener's' tomb, Akhnaton's ruined palace at Tell el Amarna, and others. Some of these gardens, notably those of Rameses II, Rameses III, Thothmes III, and Amenophis III, were on an immense scale, but although a great variety of brightly-hued blossoms flourished in these ancient pleasure and sacred gardens, there is never a mention or depiction of roses. During the Roman occupation roses were grown on a basis of thousands of bushes, but before that—and then not earlier than the Ptolemaic period—the rose is not known. In the time of the Ptolemies roses are found in use as small funerary chaplets. From this it would seem they were cultivated solely for use in mortuary ceremonial. A chaplet or small garland of nine roses found by Flinders Petrie in a burial at Hownra (c. 300 B.C.) proved to be those of a species belonging to the Gallica family (PLATE I). About a century ago, in the Tigre area of Abyssinia, two French explorers, MM. Petit and Quartin-Dillon, found this rose flourishing in temple precincts. It was given the name of *Rosa sancta*, by which it is still known. It is a somewhat dwarf bush, moderately thorny, with dull green foliage and large single pink flowers whose centres contrast brightly with their golden stamens. The rose has also been found growing in Abyssinia at altitudes above 5000 feet.

Rosa sancta probably came to Egypt by way of Nubia, whose centuries-old association with the land of the Pharaohs would permit of traffic of such a peaceful nature. If so, the rose must have been grown in gardens, wherein lies the snag, for the Egyptians went to much trouble in reproducing pictures of the various flowers, aquatics, etc., that were found in their gardens, and it is strange they should omit so obvious an attraction as the rose. It might be that this rose was first grown in Egypt and its cultivation extended to Nubia. When it fell out of cultivation in the land of the Nile, for some unknown reason, specimens remained in Nubia, and the 'Sacred Rose' could easily have escaped into the wild state. As a fixed species, its seeds would

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come true to type on germination, and they might readily be spread over the country by the agency of birds.

Another Abyssinian rose (PLATE II)—its native name is Kosso—a most beautiful climbing form of our creamy-white Musk rose with many clusters, appears to have been quite unknown to the gardeners of ancient Egypt. Apparently it never reached Nubia, for such enthusiastic patrons of flowering plants as were some of the Pharaohs were not likely to overlook so lovely a climbing rose had they been aware of its existence.

Theophrastus is an interesting writer from the classical rose point of view. It is clear he was a practical gardener and no mere theorist on the subject of flowers. He mentions few roses by name, although he does say the roses of Cyrene were the 'sweetest', i.e. most fragrant, but he refers to oleanders of rose colour. The oleander of ancient Greece and the Near East had blooms of pale rosy pink. He says, too, that there were roses with five petals, others possessing twelve or twenty, while roses having a hundred petals were grown. In addition, some were devoid of fragrance and the roses he knew differed in colour and perfume. From these short details it is obvious the first section comprised single roses, probably of the Canina type, which included the 'Cynorrhodon' rose, the *Rosa sylvatica* or *sylvestris* of the ancients. It is, I think, identical with the Bramble rose of Pliny. Theophrastus' second group appears to have been composed of semi-single forms, i.e. those having two rows of petals. There are several old-fashioned roses of this type and a few species with similar flowers still in cultivation. The last section contains fully double roses. Of garden forms known to Theophrastus, I think we may go so far as to say he knew *R. centifolia*, which may have varied slightly in colouring, a Damask rose, and possibly a semi-double form of *R. alba* with a clean refreshing fragrance. I hesitate to include the Gallica rose or any of its varieties, for these are shades ranging from bright red to deepest purple, and no ancient writer mentions anything so outstanding. It is unfortunate that early poets like Anacreon did not provide more detail of the roses their verses praised.

Twelve varieties of roses are given by Pliny, but not all can be identified with approach to certainty. His *Cyrinae* is doubtless the same as Theophrastus' Rose of Cyrene and is termed the 'best scented'. I think this is a Damask rose of a soft pink shade (PLATE III). According to the Greek writer, this rose does not bloom until the anemones and narcissus are past, and I have seen light pink Damask roses blooming

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near Aleppo and other places in the Near East. They were of a particularly 'obsolete' type and did not begin to flower until the wild anemones had ceased blooming. They were strongly fragrant. It has been suggested that this was also the rose of Paestum (Poseidonia), and remains of it have been found at Pompeii where the only rose depicted in the wall paintings is a Damask. These Paestum roses, the *biferi rosaria Paesti* of Virgil, were famed throughout Roman Italy by their peculiarity of blooming twice in a season. Many modern roses do this almost as a matter of course, but, as those who grow the beautiful Centifolias, Albas, Damask and Gallica roses know, old varieties flower once only in a season. A twice-blooming rose was sufficient of an outstanding novelty to attract considerable attention.

Pliny's Carthage rose which he noted as a winter-flowering kind was probably also a Damask rose, although it may have been identical with the Paestum roses, for it would be much more free-flowering in the genial climate of Carthage. What is usually accepted as the Damask rose today has flattish light red or deep pink flowers, but there is no proof that this is the original Damask rose as known by the ancients, and (although rare) white, light pink, deep red and other forms still exist, including some striped and blotched kinds, one of which is known today as 'York and Lancaster'. This last has no connexion with either the Wars of the Roses or with the two counties, but is a centuries-old Damask rose of unknown origin and may well have been grown in classical gardens.

The 'Mt. Pagenus' rose of Pliny would appear to be the same as the roses found wild on Mt. Pangaeus during Theophrastus' day. The digging up of flowering plants was just as much practised in the time of the old Greek writers as nowadays, for we are told the roses of Philippi were taken from the adjacent mountain where 'they were abundant', and replanted in local gardens. These roses were of a semi-double type, with very small inner petals.

Other interesting ancient roses included the late-blooming Rose of Miletus, which is stated to have had twelve petals, the flowers being a brilliant red. I think it must be accepted this was a Gallica rose, for, apart from the small number of petals, a Centifolia form with really clear red blooms is unknown, and the Alba groups are ruled out. Of course, we may be dealing with a rose of an extinct type but that is hardly likely. Pliny's Graecula rose, of which he said the buds were 'not opening', is a kind familiar to rose collectors. The buds are so full of petals and develop so slowly that frequently they 'ball', i.e.

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the outer petals become 'set' by stress of weather and refuse to open. This prevents growth inside and the buds usually decay and fall off.

This is hardly the place for a notice of rose culture in ancient Rome, where it was a flourishing business, quite as well developed within limits as the commercial flower production of today. The three main centres were at Paestum, Tibur and Praeneste, the last apparently having raised a variety of its own, said to be the latest-blooming of all the roses then in cultivation.

There is, however, a type of rose about which very little is known in ancient times; it is of a colour so common among the roses of today. This is the yellow rose (PLATE IV), probably the Austrian briar, *Rosa foetida*, and possibly also *Rosa hemisphaerica*, the so-called climbing yellow Cabbage rose which is not a form of *R. centifolia* at all—which is usually considered to have come to Europe through Persia, and thence from North Africa into Spain, being carried there during the Moorish occupation. There are certain indications of yellow roses in the ancient world, but unfortunately, with this colour being conventionalized, it is doubtful whether a real rose is being shown in any reproduction. So far as I am aware, the oldest 'picture' of a yellow rose in the Near East occurs at Knossos in Crete and dates, I think, from about 1550 B.C. This rose—as shown in the House of Frescoes—is a formalized one with single blooms of six petals. The fact that six petals are shown instead of five seems to indicate that the artist was not reproducing from the actual bloom, but from a fanciful whim of his own; but he certainly had a nodding acquaintance with roses, for on the fresco the shapes of the flower, stem and leaves are those of a true rose. The colour is a clear golden yellow, with a deeper centre spotted dark red. There are spotted forms among the Gallicas, but yellow is quite unknown among the roses of this family. It is true that Palladius refers to a bright yellow rose and Columella to a 'dark' yellow one, but there is no real proof that any such roses were in cultivation, if indeed they were more than mere flights of fanciful anticipation.

Yellow roses of a formal type—they had five petals—formed part of the decoration of bright pink silken apparel found in a 3rd-century tomb in Egypt. Remains of buds and petals of *R. sancta* were also discovered. There is nothing to show that yellow roses were being grown, although so late as the 3rd century other roses were cultivated in Egypt. There is, of course, the ever-present possibility that modern archaeological investigation may make discoveries which will throw

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additional light on the roses of the ancient world. So far as yellow forms are concerned, this would make a most welcome addition to our somewhat scant knowledge of early roses.

At the same time it must not be overlooked that some of the oldest roses, particularly *RR. centifolia*, *gallica*, *damascena* and *alba*, are ancestors of the modern roses. Indeed, the 'blood' of those four species is to be found in almost every bedding rose grown in our gardens today. Our rose gardens are merely the 20th century consequence of that first recorded ancient Greek rose garden fashioned by Midas.

PLATE I



A VERY OLD FORM OF THE *GAULICA* ROSE WHICH MAY WELL HAVE BEEN GROWN IN ROMAN GARDENS. THE STRIPES AND BLOTCHINGS ARE RED ON A WHITE GROUND AND OF A TYPE NOT SEEN ON ROSES TODAY (see p. 252)

Plates I-IV, *Ph.* Reginald A. Malby and Co. (copyright)

PLATE II



ROSA MOSCHATI VAR. *IBYSSINICA*, THE "KOSSO" ROSE OF THE ETHIOPIANS
(see p. 253)

PLATE III



A VERY OLD FORM OF *ROSA DAMASCENA*, THE DAMASK ROSE OF THE ANCIENTS
(see p. 253)

PLATE IV



*ROSA 'LULU' (or 'LOIDI'), THE 'AUSTRIAN' BRIAR FOUND WILD IN PERSIA AND
THOUGHT TO BE THE FIRST YELLOW ROSE TO BE BROUGHT INTO THE NEAR EAST*
(see p. 255)

Greek Board-Games

by R. G. AUSTIN

THE study of Greek board-games is almost wholly inconclusive, owing to the scanty and extremely imprecise evidence available. Difficulties would in any case be inevitable, since most games are better grasped in actual play than by studying a set of written rules ; and here the technicalities are expressed in a foreign language and were sometimes not clear even to their users, who cheerfully omit what they do not understand, or take it for granted that the reader is familiar with the main details. Further, the games so described by our authorities had often been long obsolete. Some of the difficulties may be realized by trying to reconstruct a game of Ombre entirely from Pope's *Rape of the Lock*, or a game of cricket from Dickens' account of All Muggleton v. Dingley Dell (even with the help of Mr A. G. Macdonell's searching critique of that famous match). Here is an example of a rather different kind, which well shows the pitfalls of unfamiliar terminology ; it is translated from K. Silex's *John Bull zu Hause*, and is an attempt to explain cricket to Germans. 'Two teams of 11 men oppose each other ; two "wickets" are set [how ?] in the ground at a distance of 20 metres, being three wooden sticks [how high ?], over which two rods (*Stäbe*) are laid [how ?]. The aim is to hit the wicket with a ball [how big ?] or to knock off the rods with it. One side defends the wicket, the other attacks ; the defenders post before each wicket [where ?] a " batsman " with a striker (*Schläger*) : the other side opposes him with a " bowler " who tries to hit the wicket with the ball [how ?]. Two men only of the defence are in actual play, the rest wait their turn ' . . . etc. Apart from the ambiguities already hinted at, the nature of the bails is not explained, the bat is described by a word which may also mean a tennis-racket or a croquet-mallet, while one might well infer that the non-batting members of the ' defence ' (itself an odd term) are lined up near the wicket anxiously awaiting their turn. This is just the kind of thing that confronts the would-be student of Greek board-games.

Further complications have been caused by the reckless use of

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modern terminology in accounts of these games, by the indiscriminate equating of Greek with Roman games, and by the convenient but unjustified application of the rules of one game to suit another. Thus, the Roman *latrunculi* or the Greek πεττεῖα ('petteia') have commonly been translated 'chess', which is impossible and utterly misleading (even 'draughts', though less misleading in certain cases, is historically anachronistic). A notorious passage of Isidore (XVIII, 60 ff.) has been ruthlessly adduced to illustrate such entirely diverse games as *latrunculi* and XII *scripta*,¹ and to prove differentiation of pieces, quite baselessly. *Latrunculi* has been loosely regarded as invariably equivalent to 'petteia'; special markings have been assumed to exist on the boards, or special powers ascribed to certain pieces, without a shred of evidence. Sometimes an ancient authority is at fault, as for instance when the scholiast to Theocritus VI, 18, writing when a knowledge of chess had spread from the East, uses the word ξατρίκιον in connexion with 'petteia'—with disastrous results, as Cholmeley's note on the passage unconsciously shows. But the blame lies more with modern writers, whose zeal for reconstruction so often outruns scholarly method; this lack of discrimination vitiates nearly all modern discussions, such as the elaborate *Jeux des Anciens* of Becq de Fouquières (Paris, 1869), or the various articles in Daremberg and Saglio's *Dictionnaire des Antiquités*, to say nothing of such pretentious works as E. Falkener's *Games ancient and oriental and how to play them* (London, 1892), or H. Coleridge's *Essay on Greek and Roman Chess*.² These methods merely madden; extreme caution should be used, and ignorance cheerfully confessed. The sane way of approach has been shown more recently by Hans Lamer in his monumental article *Lusoria Tabula* in Pauly-Wissowa's *Realencyclopädie*, and by the late S. G. Owen in some of his notes (too brief, unfortunately, especially on the Greek side) on Ovid, *Tristia* II. My purpose here is simply to restate and perhaps help to clarify certain obscurities, without any dogmatic divination or misplaced ingenuity.

Two points have hitherto received insufficient consideration: (a) the probable form of these games, in the light of the characteristic *types* of game which from earliest times have amused mankind in an idle hour all over the world; (b) the relative weight of our authorities, in view of the fact that games develop or become obsolete with time.

¹ See *Greece and Rome*, IV, pp. 24 ff., 76 ff.

² In an appendix to D. Forbes' *History of Chess* (London, 1860).

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The simplest board-games of most countries are based on three primitive activities of man—the battle, the race, and the hunt—modern types of which are chess, backgammon, and fox-and-geese. Such types one would expect to find among the Greek games; just as the Roman *latrunculi* was clearly a battle-game and XII *scripta* a race-game. Only if a game conforms to such generic types is it safe to make assumptions concerning its method of play, or to identify it with a game of another country. The object of the battle-game is to hem in one's opponents and drive them off the board; no specified number of men or size of board is needed, and in the earliest forms of the game there is no differentiation of pieces; no dice are used. In the race-game, the aim is to bring one's men to an appointed terminus and so be first off the board; again there is no differentiation, but the number of men is fixed, usually 15 on each side; dice are used to control moves. In the hunt, a single piece tries to escape from an opposing pack; no Greek or Roman game seems to have been of this type, which was common, however, in Scandinavia and among the early Celts.

Secondly, the natural development of games and changes in their fashions necessitate close scrutiny of our authorities. Such a development may be seen in the Roman game XII *scripta*—a race-game, played on a board with three tracks, as can be reasonably inferred by correlating certain passages of Ovid with numerous existing boards or diagrams.³ For later a quicker game was evolved by eliminating the middle track, resulting in the Byzantine *tabula* or τάβλη, to which Isidore (xviii, 60 ff.) refers. An actual position of this game has been recovered from an epigram of Agathias in *Anth. Pal.* ix, 482⁴; yet if we applied this evidence to the earlier game we could hardly expect good results. Again, one type of game may oust another in course of time, and the earlier one will be forgotten or imperfectly understood. Thus the relative dates of our authorities, and their possible interdependence, become of primary importance.

The Greek evidence falls into two groups: (a) casual references in literature, from Homer downwards; (b) the accounts of the antiquaries Pollux, Hesychius, Suidas and others, together with the long statement made by Eustathius in his Homeric commentaries. The difficulties offered by the second group are obvious; for long ago Casaubon pointed out that Eustathius' account is based on the lost

³ *Greece and Rome*, iv, 30 ff.

⁴ *Greece and Rome*, iv, 76 ff.; *Journal of Hellenic Studies*, LIV, 202 ff.; cf. H. Jackson, *Journal of Philology*, vii, 240 ff.

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work of Suetonius *περὶ Ἑλληνικῆς παιδιᾶς*, written perhaps in Greek, perhaps in Latin. It is doubtful if we can ever settle the interdependence of these writers, of whom the earliest is Pollux, or their relationship with Suetonius, a senior contemporary of Pollux. Reifferscheid, in his edition of the Suetonian fragments (Leipzig, 1860), thinks that both Suetonius and Pollux may derive from a common original; Lamer boldly regards Suetonius' lost book as the source of all the existing Greek evidence, except for a part of Eustathius which is definitely taken from Athenaeus. At least it is clear that our evidence for the Greek games rests mainly on the work of Pollux, a 2nd century Egyptian Greek who was acquainted with Rome, and on the excerpts made by the 12th-century Byzantine Greek Eustathius from the lost work of the Roman antiquary Suetonius: therefore, none of it is really pure Greek. Has Eustathius reported Suetonius intelligently, and how far are his descriptions coloured with the terminology of his own day? Did Suetonius himself really understand the Greek games of which he wrote? The very nature of these sources is itself abundant ground for expecting no conclusive results. Neither can such archaeological finds as exist be demonstrably related with known games. By contrast, the evidence for Roman games is like daylight, backed up as it is by the existence of undoubtedly related diagrams.⁵ The study of the Greek games is, in fact, a journey into complete darkness.

At the outset the term 'petteia' needs clarification: it is a game played with *πессοί* ('pessoi', i.e. 'pieces' or 'men'), but is the expression generic, or does it always imply one particular game? The former interpretation seems preferable, and considerable confusion has arisen from assuming that it means one game to the exclusion of others. References to games with 'pessoi' begin with Homer, and continue throughout Greek literature down to the lexicographers and Eustathius; one such game was called *πόλεις* ('poleis', i.e. 'cities'), but the same terminology is used also of others which were certainly not identical, and it seems only reasonable to regard 'petteia' as a generic term for 'a board-game' in general. Sometimes 'pessoi' are spoken of together with *κύβοι* ('kuboi', i.e. 'dice'), and such a combination might well mean a race-game and not a game of pure skill, but this can seldom be determined. The game with dice was called *κυβεία* ('kubēia'), and its meaning will be considered shortly. Plato

⁵ *Greece and Rome*, loc. cit.; a fairly well-preserved specimen of a Roman XII *scripta* board is in the Holt collection of the National Museum of Wales at Cardiff (see W. F. Grimes, *Y Cymmrodor*, xli, 131; R. G. Austin, *Archaeologia Cambrensis*, xciii, 250).

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assigns an Egyptian origin both to 'petteia' and 'kubēia' (*Phaedr.* 274d), probably rightly; it is he who first regards 'petteia' as a science (RP 333b), and he adds some valuable details of one form of it in RP 487b, where Socrates' victims, who are finally cornered and made helpless by dialectic, are compared to 'bad petteia-players, who are finally cornered and made unable to move by clever ones'. In RP 374d, both 'petteia' and 'kubēia' are said to involve long training if skill is to be achieved. Plato clearly dissociates 'petteia' from 'kubēia', i.e. he distinguishes it from a dice-game, and this is borne out by the language which he uses. For he obviously has in mind not a race but a battle, where the enemy is blockaded until he is beaten; similar expressions are used later of Scipio by Polybius (I, 84)—'he destroyed many men without a battle by cutting them off and blockading them, like a clever petteia-player'. This particular game may well have been that known as 'cities', of which more will be said later; but we are not justified in applying the rules for other forms of 'petteia' to it—e.g. because we know of a technicality called *ἱερὰ γραμμὴ* ('the sacred line') in connexion with one form of 'petteia', we cannot therefore assume its presence in 'cities', as is done for instance by Sir D'Arcy Thompson in a paper which will be mentioned again. It would be absurd if some remote investigator, misled by the prevalent Scotch habit of referring to the Association code exclusively as 'football', were to assume either that Rugby is not football, or to transfer to Association some of the rules peculiar to Rugby. A reasonable conclusion is that 'petteia' was not a particular game, but a generic expression for a game probably of the battle-type and played without dice.

We must now consider the term 'kubēia'. Probably this long meant merely one of the various methods of dicing; but when we come to Pollux and the later lexicographers, it is constantly used of a board-game in which movement is controlled by dice, i.e. a race-game of the backgammon type; and it is precisely its application to games of the battle-type that causes inevitable confusion. At first sight the position would seem clear enough in view of the plain statement of Hesychius (s.v. *πεσσοὺ πεντέγραμμα*), that 'petteia' differs from 'kubēia', for 'in the latter the players throw dice, in the former they only move the pieces'; and elsewhere Hesychius contrasts 'petteia' with 'kubēia' as being a game of skill opposed to one of hazard. But all this apparent clarity is completely inspissated by a second statement, in which he explains 'petteia' as 'a game with dice' (*διὰ κύβων παιδιὰ*),

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and by other similar glosses. Turning to Eustathius, we learn that 'in ancient times' a clear distinction between the two was made: 'kuboi', he says, are six-sided dice, while 'pessoi' are 'something different' (ὁ πεσσὸς ἑτεροῖόν τι ἔστιν); he then quotes a line of Sophocles to clinch his point, which in fact proves nothing at all. It is clear enough that by Eustathius' time the proper meaning of 'petteia' and 'pessoi' was not known, and the two were taken as some antique variant of 'kubeia' and 'kuboi', there being some unexplained distinction between the two. The cat is finally let out of the bag when Eustathius goes on to explain πεττεύειν ('to play at petteia') by using the word ταυλίζειν ('to play at τάβλη or *tabula*'): this term (or ταβλίζειν as it appears elsewhere) was the Byzantine word for the race-game then current, as played by the Emperor Zeno in Agathias' epigram already mentioned—demonstrably a backgammon-game, played with dice, a modification of the Roman XII *scripta*. In fact, Eustathius sees in 'petteia' simply a form of the principal board-game in vogue at his time, in much the same way as modern writers have equated it with chess; he does not really understand the term at all.

Clearly then Suetonius' late copyists have identified 'petteia' indiscriminately with 'kubeia'. Hesychius, who lived much earlier than Eustathius, is not quite so vague; he has hit upon a lucid differentiation between the two, yet abandons it for an explanation which better suits the games of his own day, probably because a board-game without dice was not readily comprehensible to him. For Hesychius too uses the word ταυλίζειν in one of his glosses. The confusion appears as early as the 4th century in Joannes Chrysostomus (XI, 970), and in fact, earlier still we find Pollux himself equally vague: in one passage (IX, 97) he realizes that there is somehow a difference between 'petteia' and 'kubeia', in another (VII, 203) he appears to include the former term under the head of the latter. It is significant too that Pollux uses 'kubeia' occasionally in speaking of games which from his own description cannot possibly have involved the use of dice, e.g. χαλκισμός (spinning a coin) and ἱμαντελιγμός (a game played with a knotted strap). The word was evidently the familiar term of his day for games of hazard in general, and he is apt to use the expression 'a species of kubeia' (εἶδος κυβείας) as a convenient formula for all sorts of games.

It seems evident that when the lexicographers and Eustathius use the term 'kubeia' in referring to board-games, they are merely employing the terminology of their own day, and that the proper sense

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of 'petteia' was lost. An analogous development can be seen in Latin; *alea*,⁶ the Latin equivalent of 'kubeia', is used at least once by Macrobius (late 4th century or early 5th) of a game which obviously did not need dice—the Roman sport of *capita aut navia*, 'heads or tails', described as *aleae lusus*. This suggests another possible source for confusion; for if our authorities depend ultimately on Suetonius, and if Suetonius' book was written in Latin, they may well have been misled by some ambiguity of language like the example just quoted from Macrobius: e.g. the natural Latin word for the board would be *tabula*, a word which to Hesychius and Eustathius at least would convey the meaning not of a board but of a particular *game*, the race-game *τάβλη* played with dice (so Isidore l.c. writes 'tabula luditur pyrgo, calculis tesserisque'). On the other hand, if Suetonius wrote his book in Greek, as some scholars hold, it is plain enough that even if he himself used the terms 'petteia' and 'kubeia' correctly, his copyists (including the nearly contemporary Pollux) did not understand the distinction.

To sum up so far: both 'petteia' and 'kubeia' seem to have been generic terms; the former meant a battle-game or games, the latter, after losing its original sense of dicing, became applied to a race-game; as the latter type of game became more popular, the true sense of 'petteia' was forgotten, and 'kubeia' was applied to any board-game indiscriminately. This somewhat tedious linguistic discussion has been necessary to show that when Pollux and the rest refer to a game as a 'species of kubeia' we must not take it at its face value as implying a race-game played with dice. We should remember that none of these authorities had practical knowledge of these games; even Pollux uses a past tense regularly in speaking of them, or makes it plain that he writes from hearsay.

Let us now examine the three board-games whose names we know, or think we know. One is 'poleis' ('cities'), of which Pollux says (ix, 98) 'the game played with many pieces is a board (*παιθίον*) with spaces disposed among lines; the board is called "city" and each piece a "dog" (*κύων*); the pieces are of two colours, and the art of the game consists in taking a piece of one colour by enclosing it between two of the other colour'. He then quotes an obscure reference to it from Cratinus (5th century B.C.). This description looks as if Pollux really knew something of the game. Eustathius (*Od.* i, 107 ff.) has a substantially similar account, but much vaguer, and he calls the game 'a

⁶ i.e. 'a die', but later used of a board-game with dice.

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species of *kubeia* ; he explains the term 'cities' as the old name for the spaces on the board. We can at once discredit the idea that it was a dice-game and therefore of the backgammon type, for the reasons which have been given above.⁷ It is quite clearly a battle-game, almost certainly the form of 'petteia' described with military terminology by Plato and Polybius. Here it is worth recording that the word *πλωθιον* is used by Arrian and Josephus of a column or mass of troops, a fact not hitherto pointed out in connexion with the game ; this supports the battle theory. And if the game itself was really known sometimes as *πλωθιον*, as Pollux appears to suggest, here is a fruitful source of confusion ; for if Suetonius had chanced to use the obvious Latin word *tabula* or *tabella* to translate the Greek term, we should then definitely have had a word used of the battle-game which later became identified with the race-game.

The method of capture shows that the game was analogous with the Roman battle-game of *latrunculi* (cf. Ovid *AA*, III, 358, *Tr.* II, 478) ; it is one of the oldest known, and is found in games played in Malaya, Siam, China, Arabia, and Egypt ; it obtained in a Persian game mentioned in Firdausi's *Shahnama*, as well as in the old Norse game of Hnefa-tafl and others of the same family (although there the game was a hunt rather than a fight, a kind of fox-and-geese).⁸ It is a certain clue to the nature of the game. The number of men is indeterminate, another feature of the type—it varies with the size of the board ; Photius states that in 'cities' sixty pieces were used, presumably 30 on each side, though this seems rather large. We may legitimately assume that what is known in chess as the Rook's move was used, as in all other games of this family, for it can be demonstrated that no shorter move alone will give a playable game ; there may be a hint of this in *latrunculi*, and as the Roman game allowed backward moves, 'cities' may have done so too. The tactics consisted in preventing the enemy from maintaining his massed formation, and by breaking through it to manoeuvre until his force was gradually scattered and so taken. An isolated man brought danger to himself and to his side. These are legitimate inferences from what we know of the Roman game and others of the family.

⁷ I must here withdraw a too hasty footnote to my paper in *Greece and Rome*, IV, 25, in which I put over-credulous belief in Eustathius and denied that 'poleis' was akin to the Roman *latrunculi*.

⁸ I owe this and other information, together with much helpful criticism, to Mr H. J. R. Murray, author of *A History of Chess* (Oxford, 1913).

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Clearly 'cities' was of respectable antiquity, going back as it does to Cratinus at least. Two well known passages in Plato and Aristotle respectively have it in mind. The first is RP 422e: comparing other states with his ideal state, Plato says 'none of them is one city, but many cities, as they say in the game', on which the scholiast remarks that 'cities' was a form of 'petteia', and that the proverb has come from the game. This is surely a direct reference to the game, not a mere general expression for a jest, as Warren thought; it may perhaps corroborate the use of the term 'poleis' for squares on the board, unless Plato means that the board was divided into two rival 'cities', one for each player. The comparison comes in aptly, for in the context Plato is discussing a *fight* between two cities, and it is probably not coincidence that he has chosen earlier to bring in a reference to 'dogs' (in the literal sense) as taking part in it. The meaning of the proverb is uncertain: perhaps there is a play on the two senses of 'poleis'—'many squares don't make a city', i.e. some wise unifying principle is needed also, to ensure that the forces on the squares are properly co-ordinated; just as Plato says of his ideal state: 'so long as your city is wisely ordered on the principles just laid down, it will be the greatest of all cities'.

The Aristotelian passage is in *Pol.* 1253a: Aristotle compares the cityless man (ἄπολις) to an isolated piece in a game of 'pettoi' (ἄτε περ ἄξυξ ὡν ὥσπερ ἐν πεττοῖς). The curious word ἄξυξ occurs at a much later period in Agathias' epigram on Zeno's game of τὰ βλη, where it means a 'blot' at backgammon, i.e. a single piece standing unguarded by a companion and therefore liable to capture. But the commentators are surely wrong in supposing that Aristotle had the race-game in mind; the word ἄπολις in the context, and the comparison introduced between the 'cityless' man and the pugnacious Homeric warrior (I agree with Jackson in assigning the comparison not to the ἄξυξ but to the ἄπολις) both suggest that he meant the battle-game, 'poleis'. As Newman remarks, there is no reason why ἄξυξ must imply Zeno's game; it could surely apply equally well to a piece in 'poleis' which has become cut off from the main force and so is in danger itself and a danger to others. It is this to which Aristotle compares the 'cityless' man: he resembles a piece which has 'lost its square' or has been 'driven from its polis'. In his note on the passage in Susemihl and Hicks' edition, Jackson sees the force of the comparison, but fails to realize that 'poleis' is a different type of game from backgammon. Newman is more cautious, but unfortunately he afterwards throws caution to the winds,

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and follows Becq de Fouquières in dragging in a reference to a 'sacred line' (*ιερά γραμμή*), which belongs to a quite different game and is never mentioned in connexion with 'poleis'—a good example of the danger of assuming that all these games can be treated indiscriminately.

Another reference to this game occurs in Euripides *Suppl.* 409, where the Theban herald asks Theseus 'Who is the lord of this land?' Theseus rebukes him, saying that Athens has no one ruler, whereupon the herald answers 'You give me this one advantage, as in *pestoi*, for my city is captained by one man, not by a mob', i.e. 'my side is well led, yours is not'. Some editors suppose that the words 'you give me this advantage' imply a privilege conceded by a player to his opponent, but we know nothing of any handicapping principle in any of these games, and it seems unlikely that they bear any meaning other than that suggested above. It can hardly be by accident that the comparison with 'pestoi' introduces a long discussion between the two men on rival theories of conducting a state, democratic v. totalitarian, and there may well be other allusions to the game in what follows. A second Euripidean reference occurs in a fragment of the *Erechtheus* preserved by Plutarch, *de exilio* 604 d: unfortunately the text is doubtful, and it is difficult to get a clear picture of what Euripides has in mind; he appears to compare the indigenous and homogeneous state of Athens to 'other cities' full of immigrants from elsewhere—possibly he is thinking of the ever-changing appearance of a 'poleis'-board, with the men of both sides intermingling according to the play. Sir D'Arcy Thompson thinks that the game implied in the passage was played with dice, i.e. that it was a race-game (this depends to some extent on the reading adopted); but surely the mention of 'cities' must imply the battle-game, 'poleis'.

Such are the chief references to the game of 'poleis'; it was evidently very popular and needed much skill; it obviously appealed to the philosophical mind, as Plato's frequent mention of it shows (the scientific battle-game, with its need for cool logical thinking, would plainly suit the philosopher better than the race-game played with dice). It may well have been this form of 'petteia' to which Philostratus alludes (*Heroica* II, 2) as 'no idle sport, but one full of shrewdness and needing great attention'. Although it must be emphasized that 'petteia' bore no resemblance to chess, it is clear that it needed the same qualities for success as chess does.

A second game is *διαγραμμασμός* ('diagrammismos'). This unfortunately cannot be identified. Pollux mentions it immediately

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after his account of 'poleis', but in an ambiguous manner (IX, 97): 'next to (or *close to*—the Greek word used is ἐγγύς) this game is diagrammismos, a game which they used also to call "lines" (γραμμαί)'. It is not possible to tell whether Pollux meant a related game, or simply one next on his list. Certainly Hesychius and Eustathius took it to be a game like 'poleis': Hesychius calls it 'a game of sixty pieces, white and black, moving on spaces'; Eustathius writes (II. VI, 633) 'diagrammismos, a species of kubeia, was played, they say, by means of the sixty black and white pieces on the boards' (ἐν πλανθίοις); Philemon mentions this game in the line he topes, he plays diagrammismos, he plays dice" (κυβεύει—which might mean "he plays at kubeia"). As there is nothing here that does not appear in what we know of 'poleis', it would be unsafe to give these details independent weight as evidence for 'diagrammismos'; Hesychius and Eustathius, relying on Pollux' vague word ἐγγύς, may quite well have transferred them bodily from the other game. Elsewhere Pollux (VII, 206) includes 'diagrammismos' in a miscellaneous list of 'species of kubeia', comprising among others two obviously non-dicing games, ἱμαντελιγμός and χαλκισμός; this is not reliable evidence either. If the game was really like 'poleis', and was therefore a battle-game, we cannot take seriously the statements of Pollux and Eustathius that dice were used in it; and Philemon, in his portrait of a rake in the quotation, seems to regard 'playing diagrammismos' as a different form of dissipation from 'playing with dice' (or 'playing kubeia'), although the point cannot be stressed. We cannot really infer anything definite about the game, and it is suspicious that Pollux gives no details. But the names given to it by Pollux, especially the alternative γραμμαί, would seem to point to a quite different type of game from 'poleis'; it might be a real race-game, a genuine 'species of kubeia', if we could regard γραμμαί as something like the Latin *scripta*—then, of course, we must scrap all the details mentioned by Hesychius and Eustathius; or it might even be some form of Merels (Three Men's Morris),⁹ neither a battle-game nor a race-game. It is disappointing that so little certainty is possible.

The third of these Greek board-games is the so-called πέντε γραμμαί or 'five lines'; we do not know its actual name, but this is a convenient way of referring to it. It bristles with difficulties. Pollux describes it thus (IX, 97): 'each of the players had five pieces on five lines, so that Sophocles naturally says "five-lined boards and the

⁹ cf. *Greece and Rome*, IV, 79.

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throws of the dice";¹⁰ and of the five lines on either side (?—the Greek word is *ἐκατέρωθεν*, which might perhaps mean "in either direction") there was a middle one called the sacred line, and a player who moved a piece from it gave rise to a proverb "He moves the piece from the sacred line". Eustathius has substantially the same account, but is rather fuller on the 'sacred line': he says 'the beaten player goes to it last (*ἐπ' ἐσχάτην αὐτὴν ἵεται*), whence the proverb "to move the piece from the sacred line", referring to people who are desperate and need final help'; he quotes the proverb in various forms from Sophron, Alcaeus, and Theocritus, showing that the game goes back to a respectable antiquity. Hesychius also refers to the 'sacred line', but does not explain it; Suidas interprets the proverb either metaphorically of sailors in desperate need, or of petteia-players, 'with whom there is a sacred piece'. The scholiast to Plato (*Lg.*, 739a) also speaks of a sacred *piece*, not a *line*, and adds, surprisingly, that it was immovable (*ἀκίνητος*). Pollux mentions the proverb also in an earlier passage (VII, 206), after the list of games which includes 'diagrammismos', apparently as an afterthought; the reading there is uncertain, but there seems no reason for Lamer's tentative suggestion that 'diagrammismos' too had its 'sacred line'.

The obscurity of all this evidence is impenetrable. Sophocles' line, quoted with such triumph both by Pollux and Eustathius, is quite intractable—we cannot tell from it whether dice were used in the game, or whether he is speaking of two different forms of amusement, or even its exact meaning. Again, it is clear from both Pollux and Eustathius that each player had five lines, but do they mean five vertical and five horizontal lines, or two sets of five lines running in the same direction? If the latter, why the name *πεντέγραμμα*? Finally, what was the 'sacred line'? Did it run between two sets of five lines (thus making 11 altogether), or was it the middle one of each set, or can we infer from Eustathius¹¹ that the board did in fact have five lines each way, and that the 'sacred line' was the middle one in each direction? The movement of pieces is also obscure, since we do not know the position or function of the 'sacred line'; Eustathius' language gives no help, and is in fact almost self-contradictory—he probably knew nothing whatever about it, and has invented something to sound impressive.

¹⁰ καὶ πεσσὰ πεντέγραμμα καὶ κύβων βολαί: I have adopted Lamer's suggestion for the obscure phrase *πεσσὰ πεντέγραμμα*.

¹¹ His actual words are obscure enough—*παρετείνετο δὲ αὐτῶν καὶ μέση γραμμή*.

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No answer seems possible to any of these problems. One difficulty, however, can be safely ignored—the statement that the piece on the ‘sacred line’, the ‘sacred piece’, was immovable; if taken literally, this would make nonsense of the proverb to which all our authorities refer; it must mean, not that such a piece could never be moved, but that at a given position of the game such a piece was for the moment immobilized. Isidore (xviii, 67) uses the Latin *incitus*, the exact equivalent of the Greek ἀκίνητος, in connexion with the game of *tabula*, and this is the rational explanation of it there. It is hard to suppose that the Greek word does not convey the same idea, a fact which might be used to prove that the Greek game, like the Latin *tabula*, was a race-game and a genuine ‘species of kubeia’. But there seems no particular reason to trust the scholiast to Plato any more than anyone else.

Two reconstructions of this game may be mentioned. One is by Becq de Fouquières, based on little more than imagination and good will. He assumes a board of five vertical and five horizontal lines, in itself not impossible to extract from the Greek; he then assumes that the game resembles ‘poleis’, and takes over the military tactics spoken of by Plato and Polybius with reference to ‘petteia’, although the number of pieces used is against the identification; lastly, he invents a special enclosure or square surrounding the point of intersection of the two middle lines, as a kind of sanctuary, protected by the unseen presence of what had originally been a sacred and immovable piece. Assuming that the method of capture was the same as that in ‘poleis’, he claims that this ‘sacred square’ had the power to help in a capture, i.e. that a hostile piece penned in between it and one of your own men could be taken. Such a function, in fact, does belong to a centre square in certain games; Linnaeus saw it employed in a Lapp game of *tablut* in 1742.¹² But it is surely obvious that de Fouquières’ reconstruction of the game on these lines is quite fanciful, for there is not the slightest evidence either that the game resembled ‘poleis’ or that such a special enclosure or sanctuary existed in the middle of the board. If ‘poleis’ had really had a ‘sacred line’, it seems very improbable that Plato would not have made some mention of it. Further, de Fouquières’ account of the moves, although supported by diagrams, is very difficult to follow.

¹² See J. E. Smith, *Lachesis Lapponica*, II, 55–8, a reference which I owe to Mr Murray.

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A quite different solution is proposed by Sir D'Arcy Thompson, in a paper already mentioned.¹³ He too calls the game 'poleis', and seems to assume that the rules for different games may be applied to any indiscriminately. He bases his account on an Egyptian game called 'Seega', played on a board whose squares, usually represented by holes in the ground, are set in five rows of five each way. Each player has twelve 'kelbs', i.e. 'dogs'. The central hole is left vacant; otherwise each player arranges his pieces where he likes on the board. When all the men are so entered, movement begins, each piece being allowed to move to the next vacant square, in file or row, but not diagonally. The method of capture is exactly similar to that in 'poleis'—one kelb is taken by being surrounded by two of the opponent's pieces. Possession of the central hole is most important, as its occupation gives the best opportunity of intercepting an enemy piece: 'a piece standing thereon is therefore valuable to the owner, and a special object of the opponent's attack', and so it would not be moved except in dire necessity. Thus the centre hole corresponds to the 'sacred line'.

This is at least a straightforward account based on an actual playable game, not on imagination. But it is based on a misconception, the idea that the game of the 'five lines' is to be identified with 'poleis'. The Greek sources make two quite different games, and the attempted conflation is unsound. The Egyptian game may certainly be of the same family as 'poleis', though the number of pieces used appears to preclude actual identification; the name 'dogs' for the pieces is not conclusive, for it is commonly found in various games throughout Egypt and the East (and occurs for instance in a tenth-century Indian account of the oriental game of Nard, a race-game and so of a different family from 'poleis'). As for identification with *πέντε γραμμαί*, it may be pointed out that the Egyptian game has 12 pieces, the Greek five, on each side. Further, 'Seega' can also be played on a board of 7 by 7 or 9 by 9 squares; and even if the centre hole in 'Seega' has the importance claimed for it, the fact remains that in the Greek game we have to deal with a 'sacred line', not a 'square'.

We are bound to accept the conclusion that this 'sacred line' is not only in itself an insoluble problem without further evidence, but also precludes identification of the Greek game with any other until its nature can be satisfactorily established. S. G. Owen assumed (Ovid, *Tr.* II, 475) that the game was a race-game, played with dice,

¹³ *The Game of Πόλις* (Glasgow, 1911), kindly sent me by the author.

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like the Roman XII *scripta*; the idea of γραμμαί might support this (although 'five lines' was not necessarily the *name* of the game), and the evidence of the scholiast to Plato, as already stated, might also be quoted; but the apparent shape of the board, so far as it can be inferred, is against this interpretation, while the age of the game, going back as it does to Alcaeus at least, would seem not to be in favour of a game of hazard; also, the 'sacred line' and its function is no more clear in this type of game than it would be in the battle-type. Only archaeological evidence would make identification possible; but although Lamer thinks that certain boards found at Epidaurus may have been used for this game, the evidence is still very obscure and the mystery of the 'sacred line' still not cleared up.

Thus the only one of these three games which seems to admit of positive elucidation is 'poleis'. More important to the writer is the method of approach used, in spite of the mainly negative results; it will be something gained if a few misconceptions can be removed which have hitherto been implicitly accepted as true, and if a possible path has been suggested for future investigators.

Trelleborg

by C. O. SKILBECK

THE wonderful find at Trelleborg near Slagelse in Denmark is all too little known in this country. In fact the name of Trelleborg itself is practically unknown, or confused with the town of the same name in Sweden.

The site is one of the most important earthworks in Denmark. The rampart measures 25 metres in thickness. It lies on the eastern shore of the Great Belt, and as Herr Poul Nörlund, the explorer of the site, himself says of it: 'Trelleborg lies even now so much out of the way that there are few places in the much built-up coast of Vestsjælland which are so difficult to find, with no direct road leading to it'.

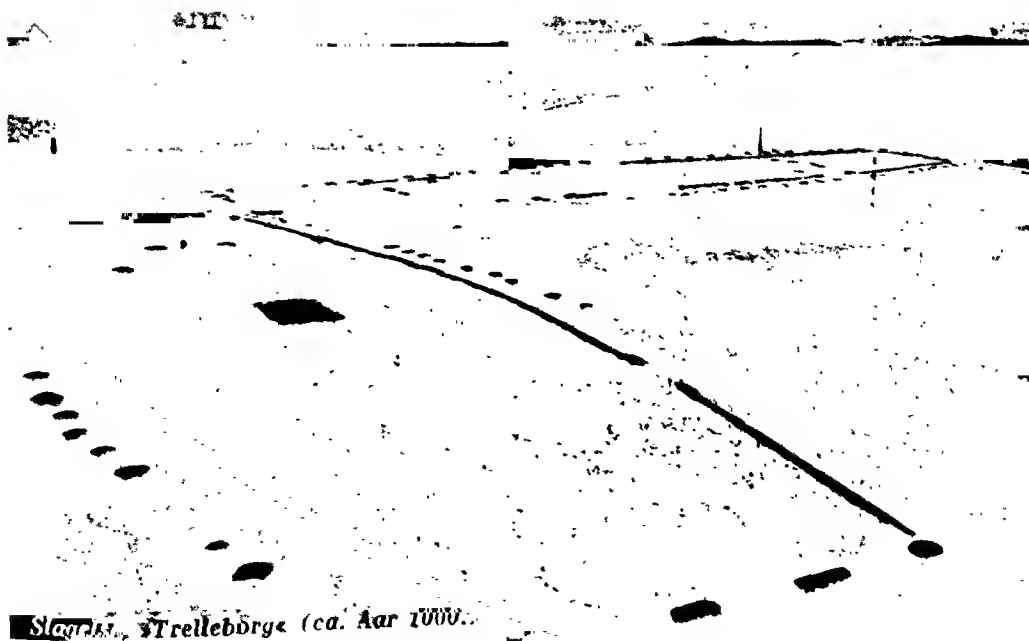
It is better to allow Herr Nörlund to tell his story of the discovery as much as possible in his own words. Writing in 1936 in 'National-museets Arbeidsmark' he says:—'when in 1934 arrangements were first made with the landlord of Trelleborg, Herr N. P. Andersen, for permission being given to the National Museum of Denmark to explore the space inside the rampart, it was anticipated that it would only be a matter of a few days' work. But that calculation was far from correct. The work grew and grew'.

In the latter part of the year 1934, we dug for one month, and for three months in 1935, and still very much more remains to be done. It was formerly considered to be a castle of refuge, surrounded by a defensible wall, to which the people of the countryside could flee when the enemy was in the land. Some considered it to have been a market place of the Viking period, of the same character as other Baltic ports of that time; but its position on the confluence of two rivers which were much too narrow to carry long ships, which were up to 20 metres or more in length, was only possible by small boats—Prams—to convey goods right up to the ramparts and further into the country.

A test trench was dug right across the site, which, in the second spit, came to the untouched clay bed. The top soil was some 30–40 centimetres thick, and when this was removed to the yellow clay,



1. EAST GATE OF TRILLI BORG, RESTORED IN 1937



2. GROUND PLAN OF HOUSES, TRILLI BORG, SHOWING POST-HOLES

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a number of dark markings were discovered, some large, some small, which in dry weather were not very clearly defined but became deeper in colour after rain. These proved on investigation to be post-holes 10–50 centimetres deep—with occasionally deeper holes up to 2 metres in depth.

The clay bed was most valuable, as it bore the unchanged impression of things laid upon it. The examination of the post-holes brought to light many fragments of different periods—from the Stone, Bronze, and early Iron Age, and from the Viking period. These holes caused much divergence of opinion. At length there were found double rows of them, arranged at one metre's distance from one another, one row with deep oblong holes, possibly for planks, the other with shallow round post-holes, each round hole corresponding to an oblong.

We then found another double row answering to the first, and eventually there appeared the outline of a complete house-foundation of surprising size, in comparison with the largest ancient houses which have previously been found in Denmark, and of most unusual form.

The longer sides were regularly curved, the gable ends being cut off. The total length was 29.5 metres ; the breadth at the gable ends 4.5 metres, gradually increasing to 8 metres in the middle. In the centre was found a stone hearth. The house had partitions made with heavy deep buried planking, divided into a large room in the middle of the building 18 metres long, and two end rooms. The doors which were in the end wall, and both partition walls, except in the middle room which had two outer doors, hung diagonally, close to the partition.

How can the existence of such a house be explained, in the trading centre of Trelleborg, where we should rather look for small traders' dwellings with walls of not more than 2 to 4 metres in length ? This great house upset undeniably the town theory. Of course it might have been a heathen god's house or temple built for merchants.

Already the first test-holes had shown that there were marks of building over the whole of the site, and this was strengthened by the excavations in 1935. Post-holes there were over the whole site, but the question was if there had been several houses, and if so in what form and direction they had been built.

After a thorough examination there was found eventually a similar double track of post-holes to those of the first house. It also was built with a long curved wall, which eventually worked out as a

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whole house which was an exact repetition of the first. It was astonishing to find that when the second house was measured it turned out that it not only resembled the first, but was of exactly the same dimensions, viz., 29.5 metres long, 8 metres broad in the widest part, with a similar arrangement of doors and partitions, and of the same construction.

The situation now developed quickly. New hearth stones and new walls appeared; so there were many houses all of similar size and construction. A third house lay beside the latest discovery, with two others at right angles to them. It was clear that there was an orderly plan, in which all the previously discovered holes were explained by the test trenches. A plan of astonishing clearness and regularity was revealed, consisting of 16 houses of the same size and arranged four-square, so that eight gable-ends gave on a central square of about 20 by 20 metres.

We must now consider the construction of these houses; although only post-holes remain, it is nevertheless certain how the houses were constructed. They were wooden buildings of the same character as the old stavekirker, before the time of stone buildings, built in the same primitive manner. The wall planking was set perpendicularly in the earth like palisading. The planks stood close, edge to edge, joined with tongue and groove; presumably every second plank was grooved on both edges.

The plans show two slightly different types: the one with continuous, but not specially deeply set wall timbers, the other with what would seem to be a space between the deeply laid plank-trenches, so that only every second plank is buried deeply between the others which presumably had been thinner having a tongued edge, originally set not so deeply, as now appears, in the clay.

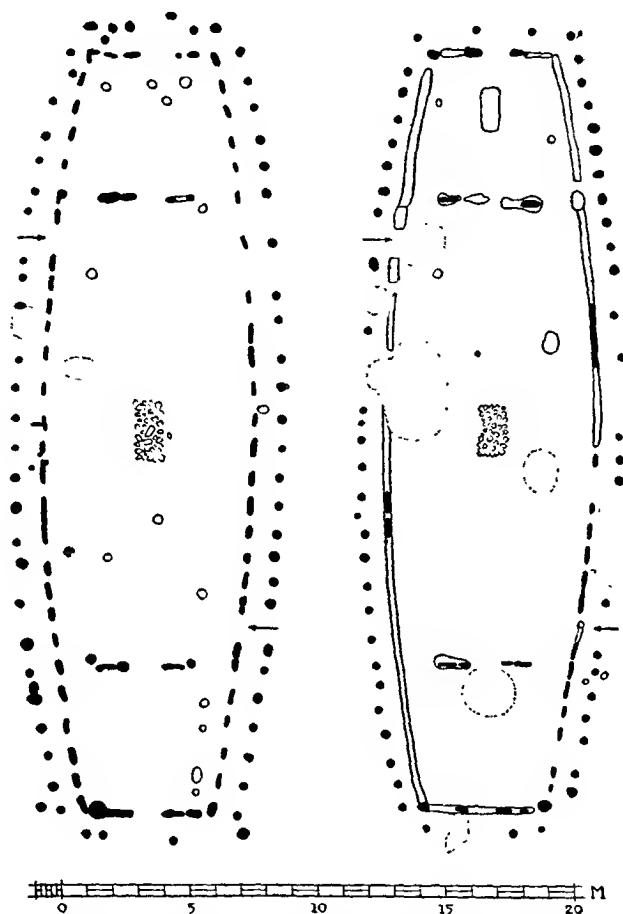
In the close series of post-holes round the outside of the houses, were the upright timbers for the support of the walls; the holes show no inclination, but the timbers may have been curved. The wall would certainly have needed such an extra support as they carried the roof. These supporting timbers could not have carried the roof directly, they were too slight to support such a great weight.

Inside, curiously enough, there was no ridge beam, such as usually exists in old houses. The whole space, which is 18 metres long by 8 metres broad, is constructed and roofed without any supporting timbers whatever.

It is probable that the roof was planked, which seems the only possible construction. The curved walls must have been so constructed

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that at the extreme end there was a flat plank wall to counter wind pressure ; but the difficult roof construction necessitated the wall-posts being held together by a running timber—a ' Hammer band ' as



GROUND PLAN OF TWO HOUSES AT TRELLEBORG IN THE
SOUTHWEST OF THE QUADRANGLE

The gable ends towards the central square are shown at the bottom of the plan. The positions of the side doors are marked by arrows and remains of houses of an earlier period by dotted lines. From *Fra Nationalmuseets Arbejdsmark*, 1936, p. 62

it is called in timber building language—in the underside of which was a shallow groove into which the upright staves were fixed. Owing to the curving of the walls it was certainly necessary to use many

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pieces. On the hammer beams rested cross beams from wall to wall, and on them were raised spars, the side pressure of which was no stronger than to support the rigidity of the roof.

One notices (PLATE, 2) immediately between the two curved house foundations, three lines of holes; such are similarly found between the other pair of houses, the gable ends of which turn inwards towards the centre place. They represent the four main 'streets' of the plan, but what is their significance? Should it be imagined that the streets were roofed in with a roof carried on pillars? Certainly not, because the distance of the rows is about 1 metre from each other, and the houses are built pretty closely together at the four corners of the 'streets', which would make traffic in such a cramped space quite impossible. The holes are moreover too small for such pillars. It must therefore be imagined that they are marks of a wooden platform similar to those of medieval construction in Swedish towns—a platform of close round cloven stakes, such as are sometimes found in our old buildings. These timbers rested upon other timbers laid horizontally, which were supported by posts driven in to prevent sinking; the holes for which still remain.

How near these post-holes approach the ramparts is not yet known; but in the opposite direction they reach just over the central square, where they stop about 5 metres from the actual centre. Here, besides holes belonging to yet earlier buildings, are four large holes arranged in a square at about 3 metres distance from one another and about 30 to 40 centimetres deep, with diameter of 50 to 60 centimetres.

The whole layout is, as it can readily be believed, constructed according to a well devised main plan.

The rampart is a ring some 17 metres thick, with a radius from its inside edge of 68 metres. The thickness of the rampart is about one fifth of the radius of its outer edge. This outer edge has only been examined on its northern side, but the inner edge is proved by a row of trial trenches within a sector of over 100°. No proof was found from 68 metres radius beyond 20 to 30 centimetres. It may be asked how was it possible to determine the exact limits of the rampart? This appeared a somewhat difficult problem. How could the length of the mound be discovered, and the gateway through it made? The answer was obtained very easily, by an examination of the inside of the northern section of the rampart by Herr Röar Skovmand, who found holes of a palisade line or bulwark that was finished by a wall of close perpendicular stakes, against which the earth bank was piled.

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This palisade continued the whole way round, except where the gates had been; there naturally they ceased, and the plan for the hanging of the gates was discovered.

Externally the rampart had a stone footing and a plank covering, with sloping buttresses. So the rampart stood as a wooden wall filled with earth. The filling is clay, turf, loose stones, and earth. According to excavations there appear to have been four gates, facing the four 'streets', north, south, east, and west; of these only the north gate has been excavated. It is about 3 metres or ten Roman feet in width. The west gate was examined by a trial hole. The east gate (PLATE, 1) is where the old entrance to the castle is supposed to have been, and of the south gate little is known.

There is an unexpected note in the earlier antiquarian writings on Trelleborg, of the year 1808, written by Pastor R. Kjærulf, of Slagelse, which states that there were four gates in the rampart and that these in former days had been closed by four iron gates. It is certainly true that the entrances to the place had been closed by iron plated doors, and it is stated that an iron key was found, which was so large, that a man could pass his hand through the ring of it. It is true that there was an iron key found in the north gate, though not so large as that mentioned by Kjærulf.

The character of the design is clear, and one can guess what its nature and purpose was, although it is something quite new to us, to which no parallel can be found.

Of the period when Trelleborg was planned one cannot say more than that it was in the 10th century. It can be seen that Trelleborg is not a self-grown or gradually growing market place, or town. It was in all particulars planned at one time, not built with complete precision, which suggests that it was not the first of its kind.

The buildings within the very strong rampart are generally of a light character, apparently never altered or restored. The whole thing can scarcely have been in existence more than a man's lifetime or two, possibly even for a shorter time. The houses are all 'folk dwellings', and they must have housed many people. Quite possibly in some part or another there had been room for animals, either within the rampart or in its 'streets'. But allowing for the fact that no agriculture was carried on from the place, one can so far declare Trelleborg as being a military position, a castle, a fort, or a fortified coastal camp.

The large houses are military barracks or quarters. The castle must have been built in some historic time of which we know nothing,

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but doubtless with the object of commanding the greatest road traffic on land and water, from the Great Belt to the interior of Sjælland. Whether it was friend or foe who settled here, the future must reveal.

Provisionally it can be said that the objects discovered are of ordinary Nordic character, as shown by the grave-finds consisting of 10th-century remains of oval brooches, a large comb, a spear-head, etc.

It is characteristic that there should be sixteen identical houses, with no chief's dwelling, which in size or situation stands above the others. Such a thing would be unthinkable in the Middle Ages, or later feudal times, but not in the Viking period, when a sort of spirit of brotherhood ruled. One has only to consider Jomsborg, and the conclusion is clear—Trelleborg is a Sjælland's Jomsborg.

When Rollo and his Vikings sailed up the Seine, and the Frankish king's messenger met them with the question, who was their leader? They answered in the following manner: 'We have no leader, we are all equal'.

Every house, or every square has perhaps room for a military unit, which naturally was led by a leader, living in common with his folk. The plan of Trelleborg is too simple and regular to have been designed by our Nordic forefathers, such a plan was far removed from what we hitherto know of them. They must have learned it in foreign lands, but we cannot say where or of whom.

The Roman camps or forts with their regular construction, which for example we know in England, would perhaps be considered to have been the distant prototype, although they were always square. Here at any rate we find the four gates.

In northern Germany there are any number of circular ramparts, where there are found certain marks of buildings, which as in the case of Trelleborg are designed in Roman foot measurements, but nowhere is there anything of Trelleborg character.

Trelleborg's foreign plan is thus one of the many unsolved riddles which still adhere to the place. Prototypes must have existed in the country from which the Vikings came, in the west or east, which need only to be discovered.

The many riddles must be unravelled in time, and first and foremost Trelleborg should be rediscovered by excavation which will go right to the bottom. Hitherto the necessary funds have been wanting. But the Carlsberg fund last year gave valuable help, in so much that we could go ahead with the work. It will therefore be hoped in the

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future to provide means to finish the task in a scientific manner. Fortunately the site is scheduled as an ancient monument, and as Herr Hans Lystrup, who comes from the neighbourhood, has given the much wanted subscription which was necessary to buy the site, Trelleborg has been made over to the National Museum's full ownership, whilst the actual rampart has been protected by a 'protective declaration'.

NOTE

The substance of this article is taken from two papers by Paul Norland in *Fra Nationalmuseets Arbejdsmark* (Copenhagen: Gyldendalske Boghandel) for 1936 (pp. 53-66) and 1938 (pp. 69-80); the plans are from the same source. Owing to the international situation we were unable to ask permission to use the information and wish to acknowledge our indebtedness to these journals. We also thank Mr A. W. Clapham, President of the Society of Antiquaries, for photographs from which the illustrations have been prepared and for other help in connexion with the article. EDITORS.

An Eighth-century Poem on St. Ninian

by WILHELM LEVISON

WHITHORN in Galloway and Kirkmadrine nearby are famous to the archaeologist and historian as the homes of the oldest Christian monuments in Scotland, namely the memorial stones still to be found there. They were erected in a district where the church history of Scotland originated through the efforts of St. Ninian. A few lines in Bede's *Ecclesiastical History*, III, 4, contain the earliest traditions about him which have come down to us. According to this late record, 'Nynia' was a British bishop who brought the Christian faith to the southern Picts (*australes Picti*). He had got his spiritual instruction in Rome, and had his episcopal see and his last resting-place amidst other saints—at Whithorn, *Ad Candidam Casam*, so called after the church dedicated to St. Martin which he built of stone, a fashion unusual to the Britons. As to his age, Bede merely says that he was at work a long time before St. Columba came to the northern Picts in 565. The intercourse with Rome can hardly have been later than the fifth century; a dedication to St. Martin who probably died in 397, cannot have been made before the same century. When Bede finished his History in 731, Whithorn was under Northumbrian rule, belonging to the northern 'province' of Bernicia. An English episcopal seat had been erected there shortly before, having Pecthelm as first bishop (*Hist. eccl.* v, 23); he had been a long time deacon and monk in Wessex with Aldhelm, the abbot of Malmesbury and bishop of Sherborne, famous for his writings, who died in 709. Pecthelm was one of Bede's authorities (*ib.*, v, 13, 18); so it has been suggested that the latter was indebted to Pecthelm for his knowledge of Ninian. Pecthelm was one of the correspondents of St. Boniface who also came from Wessex, and who wrote him a letter on a question of canonical law shortly before he (Pecthelm) died in 735.¹ It must also be noted that Bede distinguishes clearly between Whithorn, situated amongst the British, and the Pictish country, the scene of Ninian's missionary efforts.

¹ *Die Briefe des heil. Bonifatius und Lullus*, ed. M. Tangl (in *Mon. Germ. hist., Epistolae selectae*, 1), 1916, p. 55, no. 32.

AN EIGHTH-CENTURY POEM ON ST. NINIAN

The numerous English and Scottish authors who wrote on Ninian, have used, besides Bede and what information they thought they could get from monuments and church dedications, a late 'Life' of the Saint. The episcopal see of Whithorn disappears after 803, the last time we hear of Baldwulf, the fifth Saxon bishop. When the diocese was restored in or shortly before 1128,² there existed concerning Ninian 'a book on his life and miracles written in a barbarous style' which is now lost and owing to its *sermo barbaricus* did not suit the refined taste and learning of the age. Probably the second bishop of the revived see, Christian (1154-1186), prompted another 'Life' which was to change the 'darkness' of 'rustic' language into the 'light of Latin elocution'. It was written by Ailred of Rievaulx (c. 1110-1167), the Cistercian abbot some of whose works have been the subject of research in recent years. He 'doubtless was frequently in Scotland'; he came to Galloway probably in 1159 and certainly in 1165, when he visited Dundrennan, a daughter-house of Rievaulx,³ but there may have been many other occasions which led him to write a new 'Life' of the founder-saint of Whithorn. In composing it he used the practice of rhythmical endings, the *cursus* of medieval terminology. His tale is legendary in character and verbose, containing besides miracle-stories few facts which were not given by Bede. Ninian is said to have been the son of a king, to have visited St. Martin while returning from Rome, and to have got from him masons who constructed the church of Whithorn which he dedicated to the saint of Tours who had died in the meantime. Ailred refers for his work to the older source mentioned above, and modern historians attributed to this earlier writer the story of the visit to Tours which enabled them to date Ninian's age a little more accurately by the life-time of St. Martin, though they recognized the weakness of arguing from the words of an author writing more than 700 years after the times of his hero.

But there is other evidence available. It seems to have escaped

² The first certain date is given by the mandate of Pope Honorius II (Jaffé, *Regesta pontif. Rom.* 1², no 7225. Raine, *The Historians of the Church of York* III, p. 48; it belongs to the year 1128 (not 1125) according to W. Holtzmann, *Papsturkunden in England* II (= *Abhandlungen der Gesellschaft der Wissenschaften zu Göttingen, Philol. hist. Klasse*, 1935, 3d Series No. 14, p. 105, (cf. 147).

³ F. M. Powicke, *Ailred of Rievaulx and his biographer Walter Daniel*, in *Bulletin of the John Rylands Library, Manchester*, 1921-22, VI, 480. The *Vita Niniani* was edited by A. P. Forbes, *Lives of S. Ninian and S. Kentigern* (= *The Historians of Scotland* v), Edinburgh 1874, 137-57, and by W. M. Metcalfe, *Pinkerton's Lives of the Scottish Saints* (Paisley 1889), I, 9-39.

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the notice of most students of the ecclesiastical history of Scotland that a new text appeared twenty years ago which gives us the opportunity of forming a somewhat clearer idea of Ailred's lost source. It was edited by Karl Strecker, the Berlin professor of medieval Latin philology now retired, who, besides other excellent work in the field of the Latin poetry of the Middle Ages, brought to a successful conclusion the last volume of the Latin poems of the Carolingian age in the collection of the *Monumenta Germaniae historica*. I should like to call the attention of British readers to the studies on St. Ninian found in this edition, but very naturally overlooked, owing to the general contents of the collection.⁴

There exists a letter of the famous Alcuin directed to the brethren of Candida Casa. He sends a present to the body of their holy father 'Nyniga' and asks them to intercede for him by their prayers in the church of 'Nynia'. He mentions the miracles worked by this holy bishop of which he knew from poems lately sent to him by his pupils, the scholars of the church of York, proving to him the erudition of the poet as well as the saintliness of the miracle-worker.⁵ Alcuin was a friend of Bishop Aedilberct of Whithorn (777-790) who exchanged his see for that of Hexham in 790 and died in 797. Alcuin wrote a letter to him and his Hexham congregation in these years, remembering the old friendship.⁶ But we are unable to say whether the letter he sent to Candida Casa belongs to the Whithorn years of Aedilberct, or of his successor Baldwulf, the last Saxon bishop consecrated to Ninian's see in 791, or even to the time of the vacancy about 790, no bishop being mentioned in Alcuin's Whithorn letter. But it was written after he had left England about 782 to stay with Charlemagne; Alcuin's death in 804 sets the other limit. The poems on Ninian mentioned by him were unknown for many centuries, but they are preserved in a manuscript at Bamberg in Franconia. The latest editor of Alcuin's letters, Ernst Dümmler, referred there to it in 1895 in a short note; a mention is

⁴ A short mention of Strecker's essay and edition (see below) has been made by J. F. Kenney, *The sources for the early history of Ireland*, New York 1929, I, 159, n. 9; of the essay, by L. Gougaud, *Christianity in Celtic Lands*, London 1932, p. XLIX. The text has been used by J. D. A. Ogilvy, *Books known to Anglo-Latin writers from Aldhelm to Alcuin* (=The Mediaeval Academy of America, *Studies and Documents*, no. 2), Cambridge (Mass.) 1936, pp. XIV, 33, 36, 79.

⁵ Alcuin, Epist. no. 273, ed. Dümmler, *Mon. Germ., Epist.* IV, p. 431. William of Malmesbury has inserted the relevant part of the letter in his *Gesta pontificum Anglorum* III, § 118 (ed. Hamilton, p. 256).

⁶ *loc. cit.*, p. 72, no. 31.

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also to be found in Vollmer's edition of the African poet Dracontius (*Mon. Germ., Auct. ant.*, 1905, xiv, p. xv). But it was Strecker who actually made it known by an important essay in 1920 : *Zu den Quellen für das Leben des hl. Ninian* (in *Neues Archiv der Gesellschaft für ältere deutsche Geschichtskunde*, 1920-22, XLIII, 1-26), and by the edition of the text in 1923 in the *Poetae Latini aevi Carolini*, vol. IV, fasc. II-III, pp. 943-62 (cf. also pp. 452 ff. on the MS.).

Codex B II, 10, of the public library of Bamberg is not the manuscript sent to Alcuin. It is a composite volume of which the second and older part (fol. 133r-161v) was written in the tenth century and contains a copy of a *florilegium* of four books collected by Alcuin, as the title indicates. The fourth book embraces extracts from poems and ends with the Ninian texts, *Miracula Nynie episcopi* (fol. 157v-161v) and a *Hymnus sancti Nynie episcopi* (fol. 161v), undoubtedly the poems mentioned by Alcuin. The longer text, consisting of 504 hexameters which are divided into 14 chapters by prose headings, refers to the life of Ninian and to the miracles worked after his death. The 'hymn' is composed of 27 'epanaleptic' elegiac couplets, where the second part of each pentameter repeats the first part of the preceding hexameter; the distichs each begin with one of the 23 letters of the alphabet and with the four letters of *Amen*. The poet followed in this artificial way the model of the poem in honour of Queen Aedilthryd which Bede inserted in his History (IV, 20), but which was also copied separately.

The hymn is written by the same author as the larger poem, but as it gives no new facts it can be neglected here except for the dating provided by the imitation of Bede. It contains also poetical scraps taken from elsewhere, and in this resembles the principal work, which in several places is nothing but a mosaic of borrowings, the sources of which are pointed out in Strecker's annotations. The poet read and used some earlier Christian poems; but, what is more relevant here, he made larger use also of Anglo-Latin poetry nearer to his own times, of Aldhelm's works, and of Bede's metrical Life of St. Cuthbert composed between 705 and 716.⁷ We have to remember that Pecthelm, the first Saxon bishop of Candida Casa, was attached a long time to Aldhelm and was a friend of Bede; so it is natural that writings of both should be known at Whithorn. Even the headings of the chapters are on Bede's pattern. The poet must therefore belong to the eighth

⁷ W. Jaager also has shown the dependence of the *Miracula Nynie* on Bede's poem in the notes of his edition of the latter : *Bedas metrische Vita sancti Cuthberti* (= *Palaestra* 198), Berlin 1935 (cf. p. 8).

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century, and Strecker may be right in supposing that the poems were a fresh piece of work when they were sent to Alcuin by his York pupils across the sea in the later part of the century. That the author wrote at Whithorn is shown by several verses in which the place and the district are referred to as *noster*, 'our' (v. 21, 82, 99, 324); so he is one of the earliest writers of Scotland, working about a century after Adamnan of Iona. The poem is not a masterpiece; though the manuscript is not free from copyist's errors, and it is difficult sometimes to distinguish between the mistakes of the latter and those of the poet himself; he is no doubt accountable for a large part of the grammatical and prosodic blunders in spite of all his learning. Nor are his style and arrangement always very clear, even when all concessions are made to the poetical setting. The poem nevertheless has its place in literary history on account of its age; as Strecker has observed, not only do a few phrases of Alcuin show the influence of the work sent to him, but it has also impressed its mark on the poem which Aedilwulf at the beginning of the next century devoted to the history of a Northumbrian monastery (Crayke?).

But the significance of this early piece of northern poetry is not restricted to its literary interest; it has also its historical importance. About the middle of the twelfth century Ailred of Rievaulx referred, as I mentioned before, to an old Life of Ninian. The poem does not represent this lost source itself, but the poet as well as Ailred has drawn from the same Latin text, as Strecker's comparison of both has established. It makes all the difference whether a historian is depending for the same points on a 'witness' of the eighth century or of the twelfth. The contents of the poem and of Ailred's work correspond with each other on the whole, even in the order of subjects, except that the poet gives the first place after the saint's return from Rome to the Pictish mission (ch. 3), whereas Ailred postpones the conversion of the Picts (ch. 6) until after the building of the church at Witerne and two miracles (ch. 3-5). The poet knew no more of Ninian's life than Ailred; the poem also is rather a collection of miracles (as the title indeed indicates) than a biography, of miracles worked by the saint when living and after his death. Here also we are told of his British origin, his studies in Rome and his episcopal consecration by the Pope, the return to his native country and his missionary work in the lands of the Picts, where churches (*basilicae*) were erected and where 'now an excellent swarm of monks' resides. Here also the Picts are clearly distinguished from Ninian's British *patrias fines*, where he built a church

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founded on *coctilibus muris* (a word of Ovid, *Metam.* iv, 58) and adorned it with a marble pavement (v. 322, 327, 407). He dedicated it in honour of St. Martin, and had monks there with him (v. 106, 189, 206). The church was to become also the last resting-place of the saint and is visited by many people (v. 92). The funeral is indicated in the heading of ch. 9, but the account is missing, a number of verses apparently being lost; we may also have lost a short description of the tomb as well.

The poet omitted certain miracles, as he expressly declares in his last chapter, and Ailred tells some more which we may ascribe to the common source: the story of the saint travelling with his brother Plebia in the rain which does not touch them while they read the psalter, and descends on Ninian only when unlawful thoughts divert him from his book (ch. 9); the tale of a pupil who being afraid of the threatening birch intends to flee to Ireland (*in Scotiam*), but being in danger of his life on the sea repents and is rescued by Ninian's staff which he had taken with him; the staff became rooted in the ground and afterwards grew into a large tree, a fountain springing from the soil at its foot (ch. 10). Ailred ends his work by telling of the cure of two lepers effected by the waters of a well near the tomb (ch. 12, § 4). The second and the last story are connected with Ninian's wells and a tree and belong to the numerous class of topographic legends.

On the other hand the poet's longest story, the last (ch. 13), is missing in Ailred's work, who may have omitted it because it does not relate to Ninian at all but happened in his church. It is a eucharistic miracle:⁸ the priest Plecgils⁹ desired to see the mysteries of the Lord's Supper; the wafer was transformed into the infant Jesus and converted into the Bread again, after the priest had embraced Christ and touched him with his lips. The originality of this story is confirmed by the fact that Paschasius Radbertus of Corbie in his famous book *De corpore et sanguine Domini*, ch. 14, § 5 (*Migne Patrol. Lat.*, cxx, 1319 f.; Strecker pp. 957 ff.) about 832 translated the tale which he refers to *gestis Anglorum*, into prose, in which echoes of the verses occur.¹⁰ Alcuin had been

⁸ Cf. Peter Browe, *Die eucharistischen Wunder des Mittelalters* (= *Breslauer Studien zur historischen Theologie*, New Series iv), Breslau 1938.

⁹ The same name is found in the anonymous *Life of St. Cuthbert* II, 3 (ed. Colgrave, p. 78), and in the *Liber Vitae* of Durham.

¹⁰ Caesarius of Heisterbach in his *Expositio sequentiae 'Ave praeclara maris stella'* borrowed the story from Radbert; see A. Hilka, *Die Wundergeschichten des Caesarius von Heisterbach* I (= *Publikationen der Gesellschaft für Rheinische Geschichtskunde* XLIII, vol. I, p. 177), Bonn 1933.

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a friend of Adalhard of Corbie, and we have several letters written by him to this abbot ; so that it is easy to guess how the poem became known to Radbert, and how he could use for his work one of the best told stories in it which does not occur in the later ' Life '.

Ailred and the poet supply not only complete stories. There are also details of common chapters given by one or the other which may be referred without hesitation to their source. Both tell how the British king Tudvael¹¹ was punished with blindness and healed by Ninian ; but only the poet mentions that he ejected the saint from his lands (v. 111-112). He (ch. 10) and Ailred (ch. 12, § 1) relate that a crippled boy was restored to his normal state while lying at the saint's tomb during the night (after the manner of the ' incubation ' of antiquity), and that he was tonsured and lived in the service of Ninian's church, but only the poet gives his name *Pethgils*¹² in the last verse of the chapter (v. 324). Poets of this kind are inclined to drop proper names owing to difficulties of metre. Ailred alone (ch. 12, § 2.3) mentions the names of a leper (poem ch. 11 ; cf. hymn 13) and of a blind woman (poem ch. 12) cured at the saint's tomb, *Aedelfridus* and *Deisuit* (Old English *Daegswith*).

The poet and Ailred tell (ch. 8) how cattle thieves were frustrated in their purposes, and how their chief was killed by a bull and revived by the saint. The beast left the impress of its track on the rock :

228 et—mirum dictu—torvus vestigia taurus
impremit [in] silici velut [in] mollissima cera

230 unguibus et teneris cessit firmissima cautes.

It is no doubt an aetiological and etymological legend originating like many similar stories in some special feature of the rocky soil and in the relevant name of it ; one expects to find a sentence to the effect that the mark could be seen to the present day, and that the place had been given a name derived from the event. But Ailred alone preserved this motif which like Strecker I think is original :

Deinde terram *ungulis* fodiens, mirabili impetu saxum quod invenerat pede percutit, ac *mirum* in modum in tanti miraculi testimonium quasi in *molli cera* in lapide pes mergitur, relinquens in petra

¹¹ So v. 104, *Thuvahel* in the title of ch. 5 of the poem ; *Tuduvallus*, that is *Tud-wallus*, Ailred ch. 4. The name occurs as *Tothail* in Adamnan's *Vita Columbae* ; as *Tutagual* in the Welsh *Genealogies of the tenth century*, etc.

¹² Better *Pehtgils*, that is, *Pectgils*, as the name appears several times in the *Liber Vitae* of Durham.

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vestigium, et ob vestigium loco nomen designans. Adhuc enim ipse locus Anglice Farres Last, Latine Tauri Vestigium nuncupatur.

Anglo-Saxon *farres last* is of course the 'bull's track'.

But not all things which are missing in the poem and related by Ailred, can be attributed to the common source; he made additions which have to be explained only by reference to his own age. He contrasts not only Ninian's virtues, which are after all merely conventional, with the morals of his own times which he deploras (ch. 9); nearly all agree also that he transplanted institutions from twelfth century Scotland into the fifth by ascribing to Ninian the consecration of bishops and the establishment of separate parishes in the country of the Picts (ch. 6). The poet, as I have said before, mentioned only the construction of churches where in his time a monastic 'swarm' flourished. Nor did he speak of the saint's infancy nor of his descent except by a passing allusion:

97 Arbiter eternus, qui condidit omnia, sanctum

late per populos lustravit (=illustravit) *stemma clero*.

Ailred (ch. 1), besides many commonplaces, not only declares him to be descended from a noble family: *haut ignobili familia*, but even from a king: *Pater eius rex fuit*, probably a legendary addition.

The poet, like Bede, relates that Ninian erected a stone church, *Casam Candidam*, and dedicated it in honour of St. Martin (ch. 4). But only Ailred (ch. 2) tells that Ninian returning from Rome stayed some time with the saint of Tours and got masons from him to introduce the Roman method of churchbuilding in his native country, and he adds accordingly (ch. 3) that Ninian chose Martin as patron-saint having heard that he had died in the meantime. It is unthinkable that the poet would omit a personal link of his hero with the celebrated bishop of Tours, if he had found it mentioned in his source. We have here no doubt a later accretion to the legend made either by popular imagination or invented by Ailred himself. He knew of course Martin's 'Life' written by Sulpicius Severus, one of the most widely read books of the Middle Ages, and refers to it; in reading of Severus' visit of the saint he may have got the idea of a similar story about Ninian:

Severus, Vita Martini, ch. 25: Nam cum olim . . . desiderio illius aestuaremus, gratam nobis ad eum videndum suscepimus peregrinationem. . . . Quo quidem tempore credi non potest, qua me humilitate, qua me benignitate suscepit. . . .

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Ailred, ch. 2 : Rediens itaque ab Urbe vir Dei spiritu plenus,
tactus *desiderio videndi eum*, ad civitatem Turonicam iter divertit.
Quo gaudio, qua devocione, quo affectu ab eo *susceptus* sit, quis
facile dixerit ?

Martin's death in 397 gave many historians some doubtful help in dating Ninian's time : we must, however, be satisfied with ascribing his activity broadly to the fifth century. Whithorn nevertheless retains the fame of having had one of the oldest churches of Scotland, to be compared with St. Martin's of Canterbury. There are also the monumental stones, and excavation may one day confirm the tradition.

The distance of four centuries between the poet and Ailred is emphasized even by the name of the saint. Ailred uses the Latinized form *Ninianus*. In the new texts we find the genitive *Nynie* and the accusative *Nyniam*, corresponding with Bede's ablative *Nynia*. The nominative also is twice given as *Nynia* or *Ninia*, which may be a correction of the copyist ; for in two other verses the spelling is *Nyniau*, in accordance with modern scholarship which identified the name with the British Nynnyaw.¹³

Ailred in mentioning the Picts converted by Ninian calls them the southern Picts, *australes Pictos* (ch. 6), following Bede whose lines on Ninian he had copied in his preface. The poet in the heading of his third chapter has a different specific word. It is corrupt in the unique manuscript, and Strecker did not find a suitable emendation :

Quomodo patriam reversus Pictorum nationes, quae *naturae*
dicuntur, Christi converterit ad gratiam.

There exists, however, if I am not mistaken, an obvious correction suggested by the old prose Lives of St. Cuthbert, for the first critical edition of which we are indebted to Bertram Colgrave.¹⁴ The earliest biographer, an anonymous monk of Lindisfarne who wrote his work between 698 and 705, tells of a voyage which Cuthbert made by ship after Christmas from Melrose (II, 4, p. 82) :

Alio quoque tempore de eodem monasterio quod dicitur
Mailros cum duobus fratribus pergens et navigans ad terram
Pictorum, ubi dicitur *Niuduera* regio, prospere pervenerunt,
where their return was delayed for some days by a storm at sea till the fourth day after Epiphany. Bede in repeating the story says (ch. II, p. 192) :

ad terram Pictorum, qui *Niduari* vocantur, navigando pervenit.

¹³ W. J. Watson, *History of the Celtic place-names of Scotland*, Edinburgh 1926, p. 293.

¹⁴ *Two Lives of Saint Cuthbert*, Cambridge 1940.

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These Picts who could be reached from Melrose in a few days *navigando*, viz., down the Tweed and by the sea, dwelt no doubt in the eastern part of Scotland, perhaps in Fife or the neighbourhood. The name may have been given to them by the Angles and perhaps be connected with Old English *neothe*-(*weard*), *niþe*-(*weard*), 'down' (cf. the comparative *neothera*, *nithera*, later *nether*, 'lower'), and mean the low-dwellers, the Picts of the Lowlands, opposed to those of the Highlands in accordance with Bede's description of the dwelling-places of the southern and northern Picts (*Hist. eccl.*, III, 4).¹⁵ The philologists must judge the possibility of this etymology; in any case Bede's *australes Picti* correspond to the Picts of the poem, so that I may correct consequently: *Pictorum nationes, quae Niduaræ dicuntur*, inserting an *a* after *u* and writing *id* for *at*. There is no lack of errors in the manuscript; an Anglo-Saxon *id*, having the upper part of the *d* (or *ð*) raised only a little above the line, may have been easily mistaken by a Continental copyist of the tenth century for an 'open' *a* (in the *ic*-form) and a *t*.

The poet was fulfilling the wishes of the Saxon community of Whithorn in the eighth century, just as Ailred satisfied the aspirations of the restored bishopric of the twelfth, by establishing and increasing the fame of the ancient founder. What about the common source? It was certainly not much older than the poem. The author of the lost 'barbarously' written Latin Life did not know more of his hero than Bede. He also lived in the time of Northumbrian predominance in Galloway; except Ninian, his brother Plebia¹⁶ and the British king Tudvael, all names of persons given in the poem or by Ailred connected with the miracles, are English names: Pethgils (=Pectgils), Plecgils, Aedelfridus, Deisuit (=Daegswith); to which must be added the local name of F(e)arres Last, if it also has been rightly traced back to the first Life. Bede has not seen this; introducing what he has to say of Ninian with the words *ut perhibent*, he is alluding as usual to hearsay.¹⁷

¹⁵ Patrick's letter against Coroticus making mention *Pictorum apostatarum* does not help here, though the historians may be right in connecting them with the Picts converted by Ninian; see e.g. J. B. Bury, *Life of St. Patrick and his place in history*, London 1905, p. 313; Gougaud, *loc. cit.* p. 26; J. A. Duke, *History of the Church of Scotland to the Reformation*, Edinburgh 1937, p. 9.

¹⁶ Perhaps the name may be connected with Latin *plebs* (Welsh *plwyf*, having the sense of 'parish') cf. Gougaud, *loc. cit.* p. 119.

¹⁷ See Ch. Plummer, *Baedae Opera historica* (Oxford 1896), I, XLV, and my remark in *Bede, his Life, Times, and Writings* (ed. A. Hamilton Thompson), Oxford 1935, p. 140; see also C. E. Wright, *The Cultivation of Saga in Anglo-Saxon England*, Edinburgh 1939, pp. 39 ff., 246 f.

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He had not even heard of the existence of the Life, as he had of St. Columba's, of whom he says in the same chapter : *de cuius vita et verbis nonnulla a discipulis eius feruntur scripta haberi* ; and being a friend of Bishop Pecthelm, one of his informants, he would probably have had knowledge of a written text on Ninian, if it had existed then. So the lost work in my opinion was not the source of Bede's information on Ninian, as Strecker thought, but was rather composed in the middle or the second part of the eighth century. The author may have read Bede's lines, as Ailred did later ; this is how I explain the correspondence between Bede and the presupposed source.

The new text was found in a Continental library, not in England or Scotland, nor does it stand alone in this respect. The English missionaries and scholars working in the Frankish kingdom since Willibrord's days brought books with them and sought to get others from home. The British Isles acted as intermediaries not only for classical and earlier ecclesiastical texts, but their own contemporary literary achievements also participated in this wandering of manuscripts. The first Life of St. Cuthbert, written about 700 at Lindisfarne, exists today only in seven manuscripts, all either written or preserved on the Continent ; the first Life of Pope Gregory the Great, composed about the same time at Whitby, has been saved in a unique copy at St. Gall. The Continental tradition of the Penitentials originating in the rules of Archbishop Theodore of Canterbury prevails by far over the 'insular' transmission. Bede's Martyrology survived on the Continent, having received there an addition on the martyrdom of St. Boniface and his companions. The rhythmical poems of Aethilwald exist only in a manuscript of the letters of this Boniface, from Mainz, now in Vienna. Alcuin's great poem on York has survived only in two manuscripts of Reims.¹⁸ Mostly through the devastations of the Norsemen such works disappeared from British libraries, but copies were saved beyond the sea ; so in a later age, owing to the burning of the heretics and of their books, many of Wycliffe's writings were destroyed in his native country, but survived in Bohemia, the land of his follower Hus. A part of the manuscript tradition of Cuthbert's fine letter on the death of Bede is connected with Alcuin's continental

¹⁸ Both seemed to have disappeared ; so the latest editors of Alcuin's poem, Raine (1879) and Dümmler (1881), had to recur to a transcript (now at Cambridge) sent to Gale by Mabillon. But the *Codex S. Theodorici* was found in the meantime, a MS. of the ninth century, now no. 426 of the public library at Reims ; see Strecker, *loc. cit.* p. 1128.

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years,¹⁹ and it is perhaps worth while to remember that King Alfred's *Orosius* can be read not only in a few English copies, but that fragments of it are also found in a palimpsest of the Vatican Library used for a second time about 1100 at Trier.²⁰ The poems on St. Ninian emerging from oblivion after more than a thousand years, join this company, which could be easily enlarged. *Habent sua fata libelli.*

¹⁹ See N. R. Ker, *Medium Aevum* (1939), VIII, 40 ff: but also R. Brotanek, *Anglia*, 1940, LXIV, 162 f.

²⁰ See *Mon. Germ., Scriptores rer. Merov* (1920), VII, 666 on Vaticanus Reginae Christinae Lat. 497 (with earlier literature). Ampler knowledge may be expected with the progress of Dom Wilmar's *Codices Reginenses Latini*.

Ancient Rome and Northern England

A Historical Summary*

by I. A. RICHMOND

ON the northwest frontier of the Roman Empire, the upland country of northern England always belonged to the military zone. Even today, anyone traversing the wild fells of Pennine or Cheviot, which form its backbone, can soon appreciate why this should be: and understanding becomes complete when imagination has pierced the dark vista of medieval forest and outlaws' haunts and apprehended a state of affairs when the bounds between man and nature were still more loosely defined. No Anglian settler had yet begun to clear the overgrown dales for farm, hamlet and township. Man was eking out an unenviable existence between forest and fell, selecting where he could the limestone shelves whose natural drainage afforded him good pasturage and meagre tillage. Two closely related factors thus determined the political character of the country. Forest and fell not only gave cover to enemies and outlaws but at the same time prevented the growth of flourishing agricultural communities, such as were capable of developing social instincts receptive of civilization. The result was chronic unrest and potential hostility to civil government.

For the first twenty-six years of the Roman occupation of Britain, that is A.D. 43-69, the problem of controlling the north had not exercised the mind of the Roman Government. The paramount tribe of the Brigantes, centred in West Yorkshire, but controlling the Pennine country from sea to sea, had at first concluded an alliance with Rome, which was ultimately broken, not by Roman pressure, but by their own party faction. To the Roman administration the alliance must have been invaluable, since it gave the necessary breathing-space for the organization of the province and even held firm while discontent flared up in the rebellion of 61. The only important task which was still incomplete when war with the Brigantes broke out was the conquest of Wales: and this was temporarily postponed, while the Ninth Legion advanced from Lincoln into Yorkshire by the natural land-bridge of the Wolds. Its new base was fixed at York, whence it was possible rapidly to strike at the heart of the Brigantian kingdom. This done, permanent posts must at once have reached at least the fringe of Durham and Cumberland, while Roman troops no doubt entered them for the first time.

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They have left their mark in the temporary entrenchment of Rey Cross on Stainmore, four miles west of Bowes, at the very gateway of Cumbria. The official version of the campaign was that Cerialis, the Governor-General, had conquered 'a great part' of Brigantia.

The Roman high command was now fairly committed to that policy of highland conquest, which it had hitherto shrewdly and even sedulously avoided. The northern advance, however, hung fire for four years, until Frontinus and Agricola had completed the conquest of Wales. Then Agricola carried the movement rapidly forward by a series of brilliant and penetrating forays, steadily followed by cautious permanent occupation, until all the hill-country south of the Caledonian Highlands was subdued. The system of occupation was simple yet effective. After a painstaking reconnaissance, in which Roman genius was displayed to its fullest advantage, a network of roads was laid out, dividing the land into sizeable districts for police supervision and, in particular, surrounding all dangerous blocks of hill-country. At each road-junction, or at suitable stages between them, permanent forts, described below, were erected to hold infantry or cavalry garrisons, in units about 500 or 800 strong. Each fort was self-sufficient and its commander, a prefect or tribune, was responsible to one or other of the legionary commanders or legates stationed at York and Chester. Cavalry units were responsible to the governor-general. Accordingly, the trunk-road system, begun by Cerialis and completed by Agricola, was based upon these fortresses. The first requirement was a connexion between Chester and York by way of Manchester, the Stanedge pass and Tadcaster. Then came the two north roads; on the west, from Chester to the Clyde, by Warrington, Wigan, Ribchester or Lancaster, Overborough, Brougham and Carlisle; on the east, from York to Forth and Tay by Aldborough, Catterick, Pierce Bridge, Binchester, Ebchester, Corbridge, High Rochester and Newstead. Further cross-roads linked these arterial ways, the two most important running from Scots' Corner, by way of Bowes and Brough-under-Stainmore, to Brougham, and from Corbridge to Carlisle by way of Chesterholm, Carvoran and Nether Denton. Nor should the links with the sea be forgotten, since this would overlook an element much used in the Roman world for heavy transport. From Overbrough or Lancaster a road passed by Ambleside and the Wrynose pass to Ravenglass; from Binchester, South Shields was reached by way of Chester-le-Street; Northumberland was penetrated by a famous road running from Corbridge to Tweedmouth.

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This extensive network of fortified roads, neatly serving the needs of administration and defence, depended for its normal working upon the auxiliary troops who manned it. These were housed in the roadside forts, in this period defended by dry ditches and a clay or sod rampart crowned with timber breast-work and further protected by towers. The plan of such works was normally oblong or almost square, with rounded angles. Their internal buildings were of timber. A row of administrative buildings occupied the short axis and comprised a central headquarters, embodying a courtyard and judgment-hall with regimental shrine and offices ; granaries to hold at least a year's supply ; and a spacious commandant's house built round its own courtyard and ensuring privacy for domestic life. The space to front and rear was occupied by barracks or stables of standard size, in sixes or tens according to the strength of the regiment. The comparative uniformity of plan enables an excavator to recognize its elements even when only small portions of them can be recovered : and this is well ; for these early forts are usually deeply buried below later stone buildings which render their complete recovery impossible. The troops in these posts were tribal levies, drawn from the wilder provincial districts, such as Thrace, northwestern Spain, northeastern France, the Rhine frontier or the Tyrol. Only their commanders were Romans, and these increasingly of non-Italian origin. Thus, to think of this question of Empire on nationalistic lines is an anachronism born of historical ignorance. Roman citizenship was prized, in St. Paul's manner, as a legal status : it was acquired by these very levies after twenty-five years' service.

The self-sufficiency of each auxiliary fort indicates both the purpose and limitations of the systems. The garrison was adequate to undertake all the police-work of its district and to meet the everyday contingencies of a post in the hill-country. In a major crisis, however, the auxiliary forces looked for action to the heavy infantry of the legions, whose superiority in numbers and in training gained them the reputation of invincibility. Experience had indeed shown that few barbarians could withstand the legionaries' firm discipline and superior equipment. The inherent weakness of a fort-system extending from York and Chester to the Highland Gates was thus the distance separating base and farthest outposts. Agricola had guarded against this danger, first by achieving his smashing victory at *Mons Graupius*, an earlier Culloden, and, secondly, by establishing a legionary fortress at Inchtuthil on the lower Tay, to form the hard core of resistance against counter-attack.

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In this respect Inchtuthil resembled Wroxeter or Lincoln as those fortresses had been in the days before Cerialis. The need for a striking force within easy reach of the frontier was thus met, and the system was no doubt considered to have been admirably safeguarded. *Dis aliter visum* ! Very soon after Agricola's recall the balance of power was upset by the reduction of the legions in Britain from four to three. The immediate effect of this change upon the more northerly frontier arrangements is as yet unknown, but it obviously meant the end of the offensive movement and the beginning of insecurity for the northern outposts. It is a tribute to the effect of Agricola's campaigns that the skeleton of his system, thus deprived of flesh and blood, lasted until the turn of the century at least. At this time the military engineers were strenuously rebuilding timber forts in stone, beginning with the legionary fortresses, between A.D. 99 and 109, and extending simultaneously to the auxiliary forts. This change is not known to have affected the Scottish forts, but it appears on the cross-road between Corbridge and Carlisle, which was now equipped not only with frequent forts but with smaller stone-built posts between them. This would suggest that the Stanegate had become the frontier and that the land north of Cheviot had been evacuated. At all events, it is clear that the initiative had passed to the free Britons. The ebb of Roman power continued, reaching its lowest limit when the Ninth Legion was disgracefully defeated in A.D. 117. Heavy campaigning followed, supported by strong reinforcements from the Continent. But the situation also demanded a permanent reconstruction of the frontier. This was put in hand in A.D. 122 by the Emperor Hadrian himself, supported by Platorius Nepos, at that time his destined successor and Governor-General of the province.

Whatever had been the precise form of the previous frontier, Hadrian's choice confirmed the Tyne-Solway gap as the boundary of the Roman province. There was to be no more petty raiding, flaring into major incidents and wearing down the morale of the frontier troops. The limits of the Empire were to be marked by a high and massive wall protected by a dry fosse, the whole running for 76 Roman miles from Newcastle upon Tyne to Bowness on Solway, and having milecastles (that is, guard-posts with sally-ports), at every mile and intermediate look-out turrets at every 540 yards. While the fosse remained uniform, except where cliffs took its place, the first 45 miles of wall from east to west were to be of stone, for the locality provided freestone for ashlar, whin for aggregate and limestone convertible to grouting : the remaining

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31 miles were to be of turf, in which the Cumberland mosses abounded, to the exclusion of limestone and whin. The forts, as on Hadrian's contemporary German frontier, may have been intended to lie behind the patrolled line, on the Corbridge-Carlisle cross-road.

As the great scheme proceeded, modifications were introduced, some structural, of interest only as defining the order of progress, others amounting to a thorough revision of the design. The most important of the latter was the construction of forts on the Wall itself, so that offensive power might supplement the milecastle patrols more rapidly, while the military zone became much more compact. To mark off the new zone and to supervise with increased rigour all who approached it from the south, a second boundary was constructed, consisting of a dry, steep-sided, flat-bottomed ditch, from which the upcast was disposed to north and south in turf-revetted mounds one hundred feet apart from crest to crest. This barrier, commonly known as the Vallum, formed a zone in itself, patrolled by a track running between the ditch and south mound, reached from the milecastles by causeways opposite their south gates. Passage through the south mound was provided at forts only and controlled by doors placed in the centre of a causeway across the ditch. Such was the arrangement of a work long obscure in purpose and date, and hence the subject of many theories, but now elucidated by excavation.

The next important modification was the addition of new forts to the Wall. The secondary plan had provided large forts about seven miles apart, holding five hundred cavalry or eight hundred infantry: to this series belong Benwell, Rudchester, Halton, Chesters, Housesteads, Birdoswald, Castlesteads, Stanwix, Burgh-by-Sands and Bowness. Smaller forts were now supplied where experience demanded. These were Wallsend, linked with Newcastle by a four-mile eastward extension of Wall and fosse, Carrawburgh and Great Chesters, all guarding approaches obvious only to desperate men. Thus, the provision indicates both the proved efficacy of the barrier, and the determination to maintain its efficiency at weaker points.

Finally, the turf Wall was replaced in stone. This concession to uniformity, however, took place by no means so rapidly as the other changes, though some considerable time before the close of the century.

The important changes in design thus revealed are new to history, which mentions neither them nor their causes. But the causes at least may be concisely defined as pressure under-estimated by Hadrian and his staff. The successful punitive campaigns, which secured the

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builders of the Wall from interruption, must almost certainly have induced optimism as to the lightness of the future task. In its final form, the frontier defence was doubtless the most imposing in the Empire, as its remains are today, and the best equipped for the offensive method of defence employed by Rome. Nevertheless, the initiative still lay with the Britons, for the Wall was of no service as a base of attack upon communities whose centres lay beyond the Cheviot. Nature had screened them by moors and fells prolific of moss-troopers, and no Imperial ordinance could alter the geographical fact.

However quickly this stalemate in frontier policy became apparent, Hadrian stirred no finger to alter further a scheme to which he had devoted personal attention. Its cancellation was one of the earliest acts of the succeeding reign. Less than a year after his accession, Antoninus Pius decided to revert to Agricola's policy and prepared to annex southern Scotland. Large new buildings were erected in 139-40 at Corbridge, where a supply-base for the eastern road to the Forth was organized behind the shelter of Hadrian's Wall. The forward movement, however, could not be uninfluenced by previous experience, and the new frontier therefore took the form of a turf Wall, occupying the thirty-six mile gap between Forth and Clyde earlier chosen by Agricola for a temporary halt. Outposts were held beyond this, controlling the principal routes to the Highlands. The result was to create an occupied zone which, after being heavily drained of manpower by forced levies, served as a shock-absorber for frontier-troubles. Archaeology and history attest that dangerous commotions and disasters did indeed shake the new system—there were wars in 155-158, 162 and 181; but they also indicate that in so far as its function was to screen Hadrian's Wall and to preserve it unbroken, the arrangement was a success. Moreover, the shelter thus afforded gave rise to a new growth of prosperity as the Brigantes slowly learned the lessons of orderly life. In fertile Yorkshire, quite apart from the large cantonment which grew up round the fortress at York, there was room for a flourishing tribal capital at Aldborough, and, above all, new romanized farmsteads tell of agricultural prosperity spreading over all the available cornlands. In the hill-country, as of old, pasture necessarily dominated and depressed living-conditions, but a reflection of improvement is seen in the widespread distribution of Roman small objects and coinage in the hill-villages and in the steady growth of trading-posts, rich with shrines and shops, outside the forts. One of the biggest of such trading-posts was Carlisle. Thus, in the fort settlements a semblance of civilized

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life was to be found. The villages remained impervious to change : a sullen silence, broken somewhere within the tribal territory by an outburst which cost the tribe much land, best expresses the attitude of hill-folk whose economic development was curbed by nature and seemed chained by man.

At the close of the second century the larger politics of the Empire crossed disastrously with those of northern Britain. In the year 193 the Imperial succession, long uninterrupted, was broken by the assassination of Commodus ; and in the contentions between army-chiefs which followed, Clodius Albinus, Governor-General of Britain, took a prominent part, winning recognition at first but ultimately having to contest his claims by a continental war in which he lost his life. The fighting drained the province of all but a skeleton garrison, and when the news of disaster came, in the spring of 197, the Caledonian tribes broke Hadrian's Wall and vindictively wasted all Brigantia. The damage took nearly ten years to repair and only then did Severus visit the province and conduct in person two savage punitive campaigns.

The immediate result of these campaigns was peace which lasted for nearly a century, bringing with it important changes in outlook. There was no more internal trouble, partly perhaps because the Brigantes now attached a new value to Roman protection, but certainly because a gradual revolution in Roman army recruitment was taking place, so that auxiliary garrisons and legionaries were being drawn increasingly from their own district. Relations between the soldiery and their district became steadily closer, until all could regard themselves as part of the same society, and the military occupation changed from an alien domination to a territorial defence. A second important development was due to Caracalla's decision not again to occupy the Scottish lowlands, but to organize them as a sphere of influence. This was done by creating a strongly-occupied belt of territory north of Hadrian's Wall, closely corresponding with the later medieval border between England and Scotland. The chief posts were Netherby and Bewcastle in Cumberland and High Rochester and Risingham in Northumberland. On these forts, strongly manned and defended by the latest artillery, were based mobile frontier-scouts, patrolling a neutral zone and collecting information of tribal movements. Tactically, the effect of these measures was to abolish the need for two Walls and to restore the initiative to Roman hands. Politically, the border tribes became Roman protectorates, whose dependence is attested by the abundant Roman commerce which poured into their land. Behind the

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Wall, the new cohesion produced by these changes of policy is significantly expressed by the cult of the territorial goddess Brigantia, expressing in Roman terms the sense of tribal unity and often coupled with an expression of loyalty to the Imperial House.

If the new political structure required further pressure to weld it, a sledge-hammer blow came at the close of the third century, when the recovery of Britain for the Continental Empire, after ten years' separatist rule, gave opportunity for invasion to the Picts from north of the Tay. The same cycle of devastation, repairs and punitive expeditions followed, but this time no frontier reform was required. Constantius I, in 306, left Caracalla's system unchanged. The only difference was that the disparity between legionaries and auxiliaries disappeared in sweeping army changes. Heavy cavalry, mobile in pursuit, began to take the place of the old infantry, slow but relentless in advance. These changes affected, however, the forts of Durham or Westmorland and the base at York rather than the garrison of the Wall, which remained grouped in traditional manner.

Meanwhile, the development of community instincts which was thus powerfully affecting the northwest corner of the Roman Empire was becoming reflected outside it. Just as the family instinct had once merged into the clan, and that of the clan into the tribe, so now, under pressure of folk-movements, the tribe was merging into the larger unit of nation. On the Continent, this tendency had been manifest in the third century. In Britain, it appears during the fourth, when the Picts became the paramount folk of northern Scotland. They now began to organize, in new and menacing fashion, forays upon the Roman world, whose wealth and prosperity drew like a magnet those who for themselves could organize neither. The first-fruits of the new movement was an unsuccessful Pictish attack repulsed by Constans in 343. Further raiding in 360 was followed by a combination of the predatory powers—Picts, Saxons from Germany and Scots from Ireland—in joint attacks upon the province in 367–369. All these movements seem to have won the treacherous connivance of troops in the outposts. The last series was fatally successful. The Wall fell and Brigantia was again wasted, in common with many districts hitherto unscathed by raiders. When the frontier was restored the outposts were not rebuilt, and the Government was content to leave the lands beyond the Wall in the guardianship of the native states. This new attitude was ultimately the result of Caracalla's policy described above. But it is also evident that the states concerned, embracing the Britons of Clydesdale

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and of Lothian, had achieved a new unity. Their paramount chiefs now appear for the first time in history, while their hill-towns reveal the continuation of no less close commercial relations with Rome.

The stage was now set for a final development. After the usurpation of Maximus (383-388), the Picts once more broke the Wall, though it is not clear how far their devastations spread. The Wall was not restored, though a vigorous punitive campaign took place. The Government delegated its responsibility for northern defence to the chief of Lothian, Cunedda, and retained in its own hands the forts of Durham county and of the Stainmore gap. The garrisons of these forts, as recorded in the late Roman army-list, had for some time been no longer regular troops but local militia, organized in irregular units whose very names betray their territoriality. There now followed in Brigantia a veritable Indian summer of prosperity. Towns and farmsteads were alike flourishing under the protection of their own people, organized by capable officials, while the coast was shielded from raids by a system of signal-towers created after 369 and working until the close of the century. The North had thus attained, just before the collapse of Central Government in western Europe dealt it a mortal blow, its first experience of local administration with modest responsibilities. The history of Roman power is seen no longer as a gradual weakening military domination, but as the triumphant fostering of communal instincts by a steady inculcation of responsibility, even in most difficult circumstances.

NOTE

This summary is based upon archaeological work carried out in the north of England during the last decade or so. It is not intended, however, to be a summary of that work itself, but rather the impressions of a historian reading it. The following references may be made to publications where the basic material is to be found.

**The Defences of the Roman fort at Malton*, by Philip Corder.

**A Roman villa at Langton, near Malton, E. Yorkshire*, by Philip Corder and J. L. Kirk.

**A Gazetteer of Roman Remains in East Yorkshire*, by M. Kitson Clark.

The Turf Wall of Hadrian, 1894-1934, by F. G. Simpson and I. A. Richmond.
Journal of Roman Studies, xxv, 1935.

Northumberland County History, vol. xv, 1940: *The Romans in Redesdale*, by I. A. Richmond.

The Roman Wall in Scotland, by Sir George Macdonald. 2nd edition.

The Agricolan fort at Fendoch, by I. A. Richmond and James McIntyre.
Proceedings Society of Antiquaries of Scotland, LXXIII.

* Published by the Yorkshire Archaeological Society, 10 Park Place, Leeds.

Beginnings of Civilization in Eastern Asia*

by CARL WHITING BISHOP

Freer Gallery of Art, Washington

TO understand the beginnings of civilization in the Far East, we must view them in the light of the laws that govern cultural progress everywhere. Especially must we consider the region's geographical position and relationship to other lands. As a glance at a map, or better still a terrestrial globe, will show, it occupies a marginal portion of the Eurasiatic continent taken as a whole. That this fact carries with it certain implications, the study of culture-building in general abundantly shows.¹

The sea-routes which link eastern Asia with the rest of the world we may ignore; for their development did not occur until long after the period of beginnings had passed.² There were, however, two great land-routes between East and West. Of these, one connected north-eastern India, by way of Burma, with western China; while the other—the famous 'corridor of the steppes'—extended eastward from the Carpathian Mountains and the Black Sea region right across most of Asia. These natural migration-routes, traversed in geological times by numerous animal and vegetable forms, in the human period by peoples, armies, and culture-traits, have always played a part of cardinal importance in the world's history.

Let us here call attention to another fact also in this same connexion. This is the striking uniformity in space, time, and general character that underlay all the great civilizations of antiquity, taken together.³

* Reprinted with the assent of the Editor of the Annual Report of the Smithsonian Institution, and of the Editor of the 'Journal of the American Oriental Society', no. 4, December 1939.

¹ On the effect of marginal positions on the growth of cultures, see e.g., Roland B. Dixon, *The Building of Cultures*, New York and London, 1928; ref. on pp. 272 et seq. and passim.

² Sea-going ships with sails are not mentioned in the Chinese records until the 3rd century A.D.

³ The late Dr Berthold Laufer discussed certain elements of this phenomenon in an important paper, 'Some Fundamental Ideas of Chinese Culture', *Journ. Race Development*, 1914-15, v, 160-74. [See also ANTIQUITY, 1932, vi, 118-20 and sketch-map].

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In the first place, they all arose in one continuous land-area—the north temperate zone of the Old World. They did so, moreover, almost simultaneously, speaking in terms of man's long total existence; though they appeared at times successively later the farther we travel, east or west, from Anterior Asia. Again, they were all based on identically the same set of fundamental elements: the knowledge of copper or bronze, town-building, the use of wheeled vehicles,⁴ possession of the common domestic animals, the growing of certain cereals, especially wheat, and the idea of writing, in one form or another. Nowhere else did this group of culture-traits occur in similar combination; in most parts of the world, indeed, they did not appear at all until introduced in recent historical times.

We may note that the area in question here coincided almost exactly with that portion of the earth's surface known to the ancients, either at first hand or at least by hearsay—the *orbis terrarum veteribus notus* of most classical atlases.

This uniformity, moreover, goes far back of recorded time. All through the north temperate zone of the Old World, but *nowhere else*, do we find the same general stages of culture-development—first an Age of Stone, then another of Bronze, and lastly one of Iron. In most lands, man passed from the Stone Age directly into that of Iron; only in the region just named does a true Bronze Age occur.⁵

Now this homogeneity in fundamentals must signify something. How may we account for it? Not, certainly, as the result of environment alone. For three other temperate areas of continental dimensions exist—in Africa south of the equator and in North and South America; yet none of these has ever evolved a civilization of the kind named. Nor may we lightly dismiss the problem with the facile phrase, so often heard in such connexions, that 'men's minds work in pretty much the same way everywhere'. The reply to this assertion is, simply, that it cannot be true; for, if it were, then we ought to find similar civilizations springing up in all parts of the world, at widely separated times.

On the vastly prolonged Palaeolithic Period or Old Stone Age in the Far East we need not dwell here; for it has little discernible bearing on our subject.

⁴ Wheeled vehicles seem to have been developed in western Asia not later than the 4th millennium before our Era; but they took two thousand years or more to reach Egypt—an instance of an exceedingly slow diffusion-rate.

⁵ To this fact, certain indigenous civilizations of Central and South America form only apparent exceptions.

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With the succeeding Neolithic Period or New Stone Age it was otherwise. There came into being in Eastern Asia several distinct cultures of this general type, some of them traceable even today.⁶ The peoples possessing these were already members, in a broad sense, of those races that have occupied the region from prehistoric times down to the present.

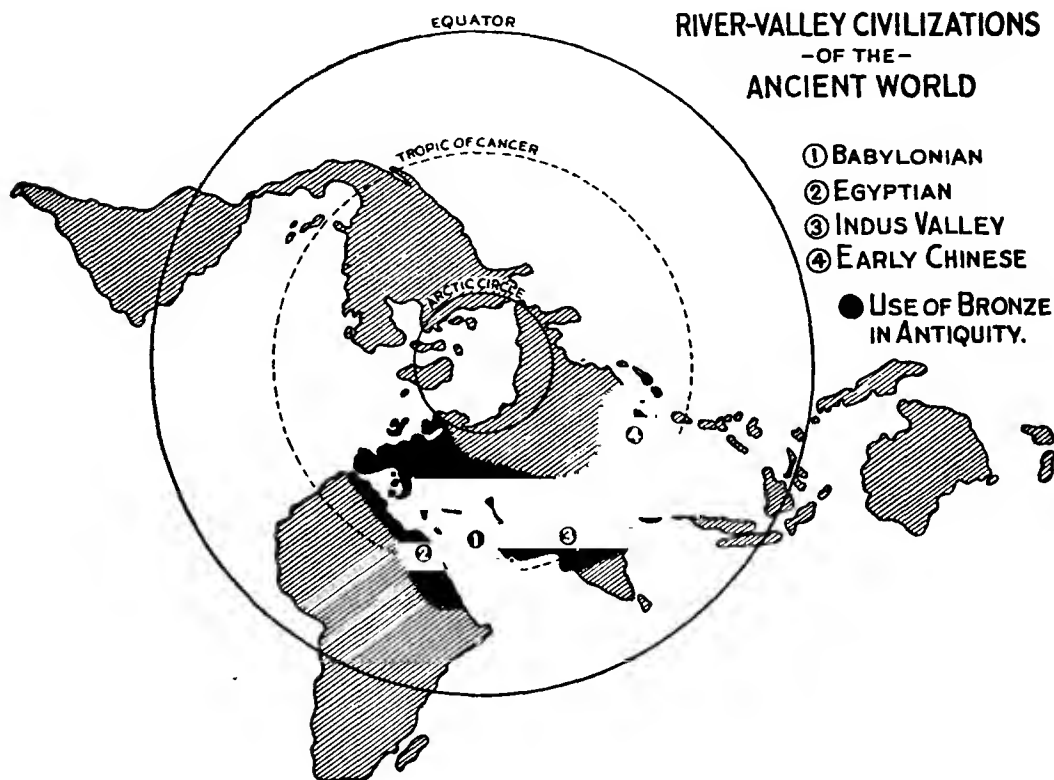


FIG. 1

The contacts of these Far Eastern Neolithic cultures seem to have been more especially with the northern portions of both the Old and the New Worlds.

A typical implement common to all parts of this vast area is, or rather was, a rectangular or semilunar stone knife, usually with one or

⁶ As regards China especially in this respect, see Dr Wolfram Eberhard, 'Early Chinese Cultures and their Development: a new Working-Hypothesis', *Smithsonian Annual Report for 1937*, pp. 513-30.

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more circular perforations. The use in winter of pit-dwellings or earth-lodges points the same way. Another culture-trait found both in Eastern Asia and in the circumpolar regions of either Hemisphere was the sinew-backed or compound bow. Other instances of a similar sort might easily be adduced.

Wherever climate, soil, and freedom from forest-cover allowed, the New Stone Age peoples of the Far East drew their sustenance mainly from what they could grow. Their chief source of food seems to have been millet (*Panicum miliaceum*); although rice appeared in Central China before the end of the period. Neither of these plants is indigenous to Eastern Asia; hence only as a result of culture-diffusion, almost certainly from or through India, could they have reached China. Rice spread to that country considerably after millet,⁷ and did not appear in the islands off the coast of Eastern Asia until later still.

On all save the youngest Chinese Neolithic sites, the only remains of domestic animals are those of the dog and pig. On the later sites occur also bones of the sheep and ox. Those of the horse are likewise reported on some of them; but whether these belong to domestic individuals seems uncertain. A true wild horse (*Equus przewalskii*)—not merely an animal descended from escaped domestic stock—still exists in Mongolia, and may formerly have ranged also over the northern Chinese plains.

These Neolithic planting peoples of the Far East made a coarse unglazed pottery, shaped by hand (most often, perhaps, by the 'coiling' process) and decorated with impressions of various kinds or with lumps and strips of clay stuck on before firing. Such ware seems, indeed, to have survived among the Chinese peasantry until far down in the historical period.⁸

Religion was pretty surely animistic in character. Among the planting peoples, at least, there seem to have been orgiastic fertility-rites, perhaps accompanied by human sacrifice. In many parts of the Far East, maiden sacrifice by drowning or exposure persisted even into historical times. Today the worship of goddesses appears most commonly in areas like the Eastern Asiatic coast and islands, regions marginal to the ancient Chinese civilization proper, and latest in being

⁷ Numerous indications, drawn from all parts of the Eastern Hemisphere, have led me to believe millet to have been the first cereal brought under cultivation by man.

⁸ Verbal communication from Mr T. Y. Ch'iu, of the Peking Historical Museum, confirmed by my own observations in the field.

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influenced by it. The Japanese Sun Goddess, officially claimed as ancestress of the imperial line, is probably the best known example.

Indications exist too of a former matrilineal social organization, with 'priestesses' (really exorcists or medicine-women) and female rulers. Society in the Far East during the New Stone Age seems indeed to have borne a decidedly feminine cast.

On various Late Neolithic sites along or near the great trans-continental migration-route already mentioned, we find pottery much finer than the coarse variety named above. This is the now famous Chinese painted ware.⁹ Whether this was ever turned on some form of wheel or was entirely shaped by hand is still disputed; but it bore decoration in simple colours, chiefly red, black, and white. Designs, at first geometrical in character, later (in northwestern China at least) came to include naturalistic elements. With specimens of this latter class occur small but increasing numbers of copper or bronze trinkets,¹⁰ perhaps introduced by trade; these yield the first faint indications that metal, already long used in the Near East, was beginning to be known in Eastern Asia also.

This Chinese painted pottery seems not to have been accompanied by any distinct culture of its own. It bears rather the aspect of an individual culture-trait, detached from its place of origin. Many observers believe it to be related genetically to similar wares found in the West, particularly in South Russia. As to its date, several independent investigators ascribe it to the closing centuries of the third millennium B.C. Others put it later; but in so doing, they hardly allow time for what we know came later.

In northeastern China, not long after the Painted Pottery phase of the Late Neolithic Period, we find a culture different and somewhat higher in type, though retaining many earlier elements. This culture, still quite without metal so far as we know,¹¹ was characterized by a smooth black earthenware of fine texture and high finish. It had domestic cattle, sheep, and perhaps horses,¹² and displayed in addition

⁹ This was first made known to the world in 1922 by Dr J. G. Andersson, then of the Geological Survey of China.

¹⁰ The exact composition of these has, so far as I am aware, never been made public, welcome though such information would be.

¹¹ Metal may, however, have begun to appear in northwestern China, at the eastern end of the steppe-corridor; see footnote 10.

¹² See, however, what has already been said in regard to the horse in prehistoric Eastern Asia.

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several other features long known in the Near East but new in China. Among these was the use of the potter's wheel and the building of small towns encompassed by walls of tamped earth (*terre pisé*). These and other traits foreshadow elements in the Chinese Bronze Age destined soon to appear.

There follows a 'Dark Age', of unknown but certainly not long duration. Then, quite suddenly, we find ourselves confronted by a fairly mature civilization of Bronze Age type. How or where this came into being, we can not yet say; but we first find it in the basin of the Yellow River during the former half of the second millennium B.C.¹³

A number of traits, all of them previously long known in the Near East, now occur for the first time in Eastern Asia also. Among these was of course the extensive use of bronze itself for the purposes of war, ritual, and luxury (though little if at all for domestic tools and implements). Especially notable were the magnificent sacrificial vessels, used then, as long afterward, in connexion with the worship of the spirits of deceased ancestors.

There likewise now appears the growing of wheat, already long practised in the Near East (where that plant is native). The area ultimately embraced by wheat culture in antiquity coincides almost exactly with that in which bronze came to be used. Further, with two exceptions (both of them Mediterranean varieties believed to have been introduced by European missionaries in the sixteenth or seventeenth centuries),¹⁴ the wheats grown in China are precisely those cultivated along the steppe corridor and in the Near East.

We also now find in China the use of the chariot, drawn, just as in the Occident, by two horses yoked—not harnessed—abreast. There appears too a new style of architecture, with colonnaded and gabled buildings, sometimes of large size; although just as later, the pillars were of wood, not stone or burnt brick. We also now encounter a system of writing, obviously with a long period of development behind it somewhere, and ancestral to the present Chinese script.

The Chinese Bronze Age was thus by no means primitive or elementary. It was nevertheless decidedly more archaic in aspect, more impoverished in content, than the corresponding civilizations

¹³ On this dating, now generally accepted, see my paper, 'The Chronology of Ancient China', JAOS 52 (1932), 232-47; ref. to p. 246.

¹⁴ For this information I am indebted to a personal letter, of 4 January 1934, from Dr T. H. Shen, of Nanking University.

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of the Occident. Such a state of affairs is however quite normal to a marginal area like the Far East.

With this somewhat belated appearance of a Bronze Age civilization in China, we reach the beginnings of that country's historical existence. The period is that of the Shang Dynasty—the first Chinese

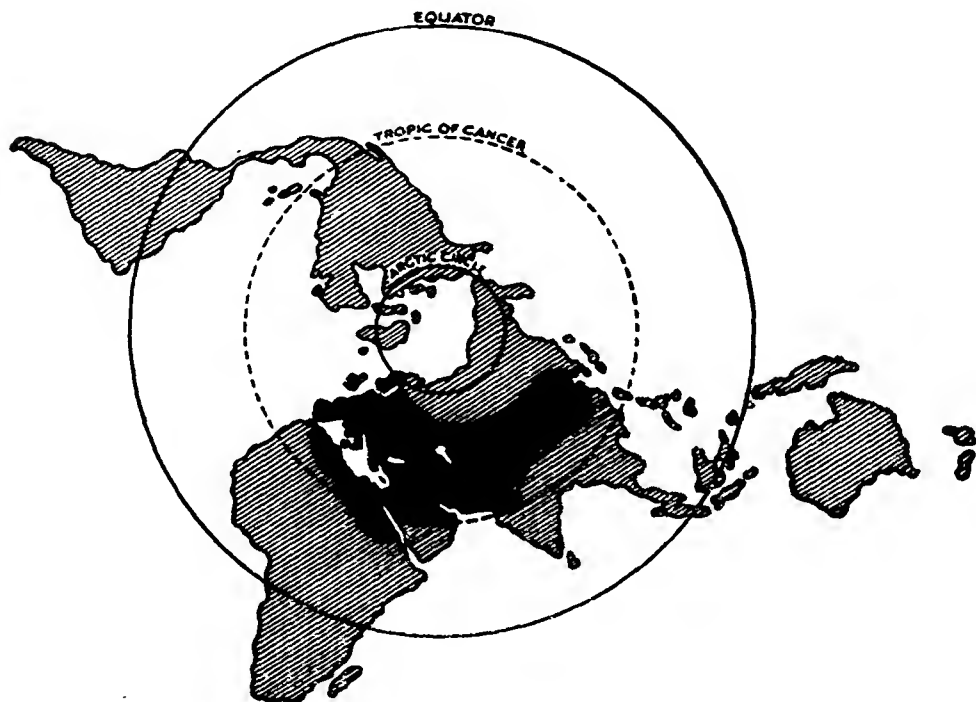


FIG. 2. WHEAT CULTURE IN ANTIQUITY

ruling house of which actual remains have been identified.¹⁵ The line seems to have begun during the second quarter of the second millennium before our era.¹⁶

¹⁵ According to later Chinese legend, there was one earlier still—the Hsia Dynasty; but for the existence of the latter we have as yet no archaeological evidence.

Dr H. G. Creel has ably discussed the question of the 'Hsia Dynasty' on pages 97-131 of his *Studies in Early Chinese Culture*, Baltimore, 1937. See also my paper cited in footnote 13; ref. to p. 243. Dr Creel's conclusions and my own, though reached quite independently, are in essential harmony.

¹⁶ On this dating see my paper mentioned in footnote 13; ref. to p. 242.

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The Shang priest-kings, of primitive type, worshipped the spirits of their ancestors and also various divinities, of whom the chief was Shang Ti, 'the Ruler Above'.¹⁷ In war, they and their followers used spears, dagger-axes,¹⁸ and helmets of bronze, as well as compound bows and two-horsed chariots. As in the early Near East, political organization took the form of city-states, of which the one ruled by the Shangs themselves claimed allegiance and tribute from the rest. Incidentally, society was now, among the ruling class at least, organized on a rigidly patrilineal basis.

Sites of the Shang period have yielded no bronze swords. Evidently in China as elsewhere, these weapons appeared only relatively late in the Bronze Age. We do, however, find in China at this time two types of bronze implements of no little significance. One is the socketed celt,¹⁹ which in the Occident antedates the middle of the second millennium B.C. and has been traced there to still earlier forms. The other is the socketed spearhead, evolved in the West before the beginning of the same millennium from an earlier tanged type. Both implements, though absent from China in their more primitive stages, appear there fully developed during the Shang Dynasty.

Not long before the close of the second millennium B.C., the Shang Dynasty fell before invading peoples from the west headed by a group called the Chous.²⁰ The chieftain of the latter then made himself king of northern China—roughly, the basin of the Yellow River. There he set up a feudal organization, primitive in type but forming none the less a decided advance over the mere tribute-collecting system of the Shangs.

The Chous, too, worshipped their ancestors, and also various divinities, of whom T'ien, 'the Sky', was supreme.²¹ They seem

¹⁷ The two 'Shangs' in this sentence have quite different meanings, and are written in Chinese with distinct characters.

¹⁸ Bronze dagger-axes had been used in the Occident also before the invention of bronze swords in that quarter of the globe.

¹⁹ On the distribution of the socketed celt, see C. G. Seligman, 'Bird-Chariots and Socketed Celts in Europe and China', *Journ. Royal Anthropol. Inst.*, 1920, III, 153-8; ref. to p. 154.

²⁰ On the probable date of the Chou conquest, see my paper cited in footnote 13; ref. on p. 237.

²¹ T'ien and Shang Ti (the chief god, as we have seen, of the previous dynasty) were eventually equated with each other, much as Zeus and Jupiter, originally quite distinct, came to be identified.

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likewise to have introduced into China the seven-day week²² and the employment of eunuchs as harem-guards—both traits believed to have originated in the Near East.

At or not long after the Chou conquest (the point is still undecided) there appeared in northern China the custom of erecting grave-mounds over the illustrious dead. This practice had already long prevailed in the steppe belt, from southeastern Europe far into Central Asia. In that area, just as eventually in China, mounds were heaped over tomb-chambers (of wood or stone) richly furnished with grave-goods; and further, in both areas the bodies thus interred were covered with red pigment, haematite or cinnabar.

The Chinese civilization of earlier Chou times was the possession mainly of a small ruling class. The masses, on the other hand, retained much of the ancient Neolithic culture of their ancestors.²³ For this we have evidence both in ancient literary notices and in the abundance of stone implements and primitive pottery found on, or just beneath, the surface of the soil. Further, in line with what has already been indicated, while weapons of bronze are common on Chinese sites, industrial tools hardly ever occur.

For some three hundred years (*c.* 1050–770 B.C.) the Chou capital remained in northwestern China, just at the eastern gateway of the steppe corridor. The eighth century B.C. however, brought a fresh attack from the west, by a people known as the Jungs. This forced the ruling dynasty eastward, deeper into northcentral China. It thus lost its political power: but its sacerdotal character kept it in place for some five hundred years longer, until the third century before our era.

In the Near East, by the end of the second millennium B.C., bronze had begun to give place to iron. In eastern Asia the Bronze Age lasted until considerably later; but it displayed from first to last a character backward and undeveloped by comparison with those of the Occident. Whole categories of bronze objects found on Western sites (particularly those of the Late Bronze Age) are rare or entirely lacking in China. Among such objects are bronze pails, sickles, hoe-blades, fish-hooks, razors, pins, fibulae, shields, trumpets, and many others.

Of such 'culture-lag', the part played in ancient China by the

²² The Shangs, before their overthrow by the Chous, had used a 'week' or day-period of ten days.

²³ On the survival of Neolithic types of pottery among the Chinese peasantry of early historical times, cf. footnote 8.

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bronze sword provides an excellent illustration. In the Occident that weapon, after undergoing a long and complex evolution from very primitive beginnings, had reached a developed form by the second millennium B.C. In China, on the other hand, the bronze sword does not occur at all until a thousand years later, after the Chou conquest.²⁴

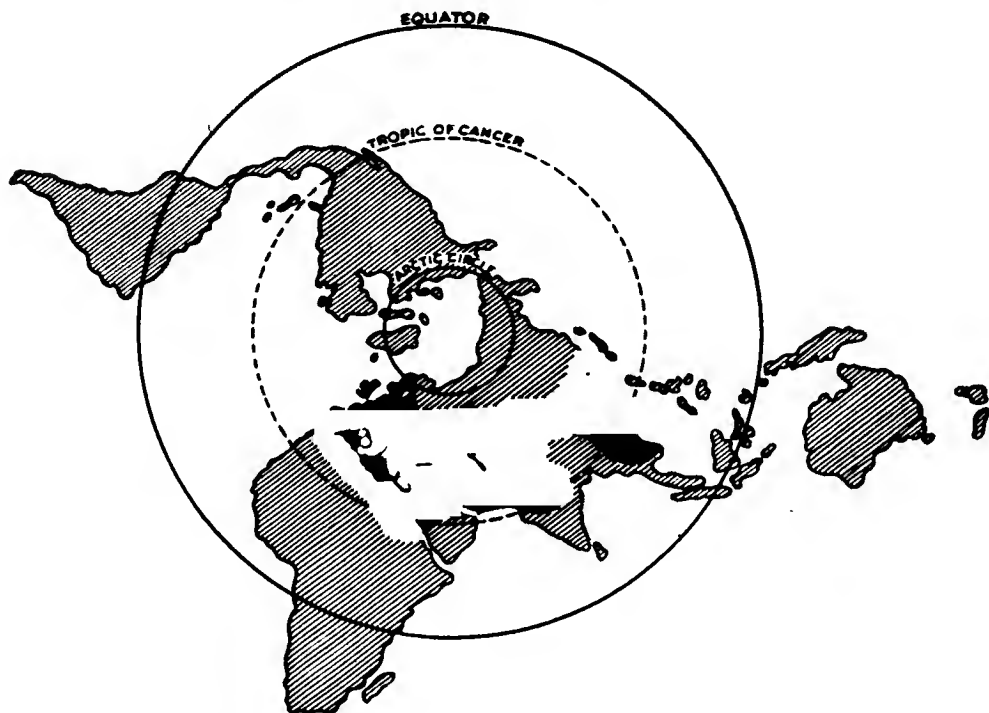


Fig. 3. KNOWN OCCURRENCE OF BRONZE SWORDS IN ANTIQUITY

In the Near East by that time it was already being superseded by the sword of iron.

The rather undeveloped type of bronze sword—in reality scarcely more than a dagger—found from Hungary eastward all along the steppe-belt was that which eventually appeared in China. It was undoubtedly

²⁴ On this point see, e.g., Olov Janse, 'Notes sur quelques épées anciennes trouvées en Chine', *Bull. Stockholm Mus. Far Eastern Antiquities*, no. 2, 1930, pp. 67-134; ref. on p. 93.

At the time when they conquered northern China, the Chous, like the somewhat earlier Vedic Aryans when they first occupied northwestern India, seem to have had bronze daggers but not swords. In many other ways also, the cultures of the two peoples present interesting parallels.

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introduced into that country by the nomads—possibly the Jung people already mentioned as having attacked the Chous in the eighth century B.C. In any case, China lies almost at the eastern border of the bronze sword area, and the variety found there underwent far less evolution than did those of the Occident.

Another example of culture-diffusion is that afforded by the horse-drawn chariot. That engine of pageantry and war originated in western Asia, and spread thence both east and west over much of the north temperate zone of the Old World. It survived latest in marginal areas like China on the one hand and the British Isles on the other.

Certain species of animals and plants had slowly been brought under human control in the Near East before the fourth millennium B.C. Far later, many of the same forms appeared in China also, around the time when the Bronze Age itself began there. Whether they did so one by one at different times, or all together, as parts of an integrated culture-complex, we cannot yet say.

Be that as it may, few if any of these animals and plants were of native Chinese origin. Thus China has so far yielded no trace of a possible wild ancestor for her domestic ox. Again, the Chinese sheep appears not to be derived from the wild species which still occurs in the mountains of the northwest, but from a western wild form, the urial (*Ovis vignei*), also ancestral to certain early Occidental forms.

Nor does the Chinese domestic horse seem to be descended from the Mongolian wild form; it must, on the contrary, have been introduced, already domesticated, from some western region.²⁵

The domestic fowl, not identified on Chinese Neolithic sites but known by Shang times, must have come from India; for its wild ancestor, the red jungle-fowl (*Gallus ferrugineus s. bankiva*), occurs in that country but not in China. From India, too, seems to have come the basic stock of the domestic water-buffalo.²⁶

Moreover, not only did the ancient Chinese acquire most of their domestic animals as culture-loans from abroad, but they failed to

²⁵ The domestication of any wild species is an exceedingly slow process, while the horse does not appear in China until quite late. Further, certain details of conformation, particularly of the skull, suggest kinship with the Western domestic breeds and not with the Mongolian wild horse (*E. przewalskii*). That the latter has crossed with it to a slight extent seems certain, however.

²⁶ The Chinese water-buffalo shows far less modification under domestication than do the Indian breeds. It would seem therefore to have received a large infusion of the blood of the wild form which we know once occurred in China.

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make as full use of them as did, for example, the ancient peoples of the Near East. Thus, though a dairy-economy and the use of the ox-drawn plough had both long been known in the latter quarter, the one trait was never adopted by the Chinese, the other not until around the fourth century B.C.²⁷ Again, though the Chinese have had sheep

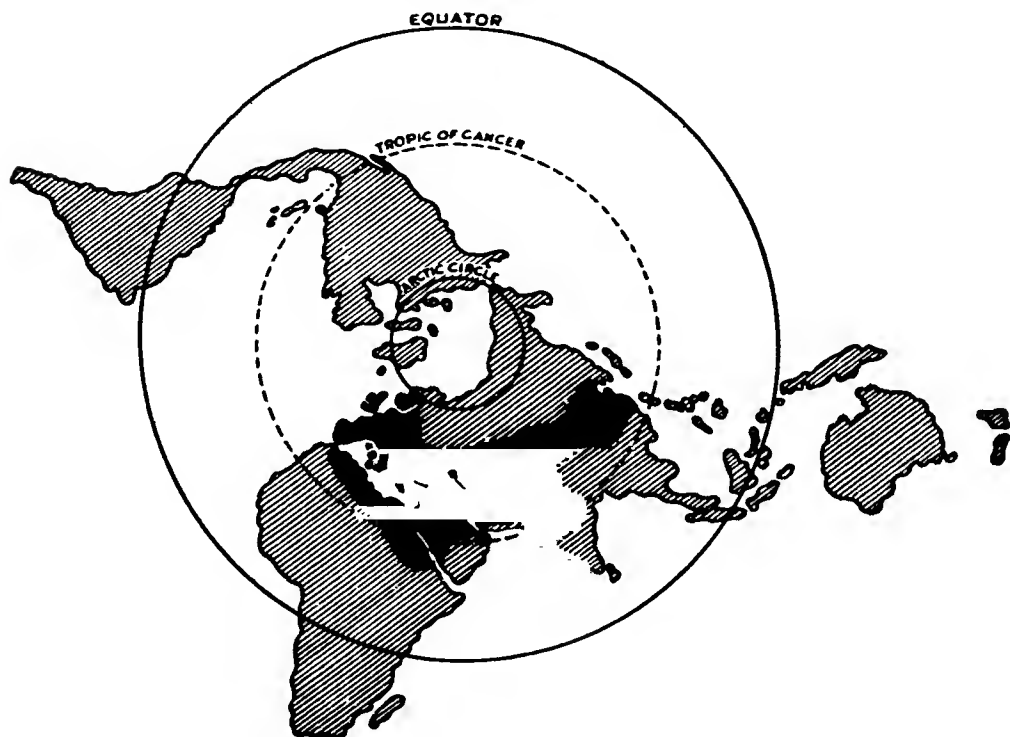


FIG. 4. KNOWN DISTRIBUTION OF THE WAR CHARIOT IN ANTIQUITY

from late prehistoric times onward, unlike the peoples of the Near East they have never made or used woollen cloth.

China's cultivated plants likewise have been derived largely from other lands. Millet, rice, and sorghum (*kao-liang* or 'giant millet') came from India, just as did sugar-cane and cotton later on. Wheat reached China, about the beginning of her belated Bronze Age, from

²⁷ On the latter point, see my paper, 'Origin and Early Diffusion of the Traction-Plough', *Antiquity*, 1936, x, 261-81; ref. to p. 278. The article has been reprinted in the *Smithsonian Annual Report for 1937*, pp. 531-47; ref. on p. 545.

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the West. Similarly (though of course not until long afterward) maize, potatoes, tobacco, and other plants were introduced from the Americas. Instances of this phenomenon, in regard both to plants and to animals, might easily be multiplied.

By the first half of the first millennium B.C., an important cultural development, the rise of pastoral nomadism, had begun to take form

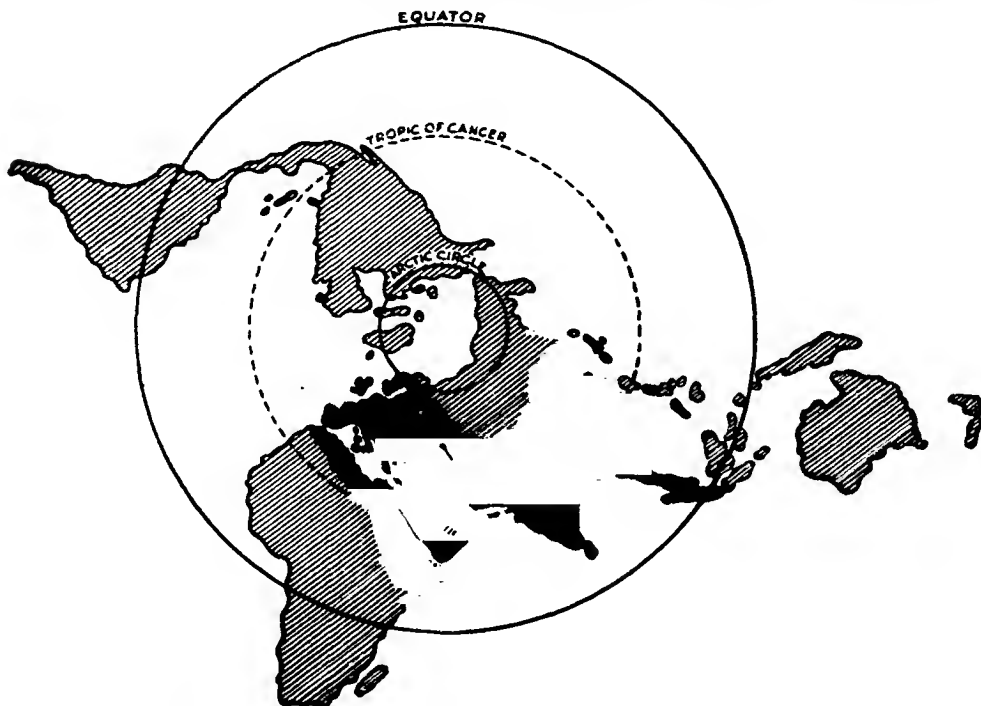


FIG. 5. DISTRIBUTION OF THE TRACTION PLOUGH BEFORE THE AGE OF DISCOVERY

in Central Asia. That region, as abundant remains show, was once occupied by a sedentary planting population similar to that of Neolithic northern China, already mentioned. Apparently about the time named, however, we find indications of a change. How far this was due to growing desiccation we do not know definitely,²⁸ but its form

²⁸ That *some* climatic change has occurred seems certain. On the fluctuations in level of the Caspian Sea, cf. Ellsworth Huntington, *The Pulse of Asia*, New York and Boston, 1907, *passim*. At the opposite end of Asia, northern Chinese Neolithic sites have yielded remains of warmth and moisture-loving animals (notably the water-deer, *Hydropotes inermis*) which could not survive there today.

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was determined by the acquisition of domestic animals—sheep and cattle—adapted to a pastoral and nomadic manner of life.

The predecessors of the present peoples of Central Asia seem to have gone about on foot.²⁹ They knew the horse-drawn chariots of their Chinese neighbours, but never adopted them, probably because their own cultural level was too low. During the earlier half of the first millennium B.C., however, first in western Asia, then a little later along the northern borders of China, we find a growing use of mounted troops. How this development took place, we cannot say; but the analogous one that occurred among the American Plains Indians when they acquired the horse from the Spaniards affords some illuminating suggestions.

In the Occident, bronze gave place to iron far earlier than in China. In the latter country the change did not begin until about the middle of the first millennium B.C., and was not completed until shortly before the commencement of the Christian Era.

Meanwhile the older metal had diffused itself, well beyond the limits of the ancient Chinese culture-group proper, into various marginal areas. In these the Bronze Age survived even later than in the Yellow River basin itself. Thus, in extreme southern China and the adjacent portions of Indo-China iron did not supplant bronze (under Chinese influence) until just after the beginning of our era. In Korea too we find a belated Bronze Age, introduced there from China probably during the Eastern Chou period. From the peninsula bronze soon spread to southern and western Japan; but before it had had time to reach the east and north of that country, iron overtook and supplanted it. These events marked the definitive close of the Bronze Age and the commencement of that of Iron in the Far East.

During the latter part of the Chou period Chinese feudalism gradually crumbled. Among the causes were the supplanting of the old chariotry (the arm *par excellence* of the feudal nobles) by bodies of militarily more efficient horse-bowmen, copied, as the old Chinese records expressly state, from the northern nomads, and the rise of a money economy which slowly replaced the ownership of land and serf labour as the source of wealth and power. There emerged in place of the older political system a number of large centralized states which waged frequent war on one another, and paid scant heed to the claims

²⁹ More than one ancient Chinese text, referring to wars with the northern barbarians even as late as the sixth century B.C., says 'They fight on foot, but we in chariots'.

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of their nominal suzerains, the Chou kings. In this historical process the compelling need for the consolidation of authority over systems of hydraulic engineering—of flood-control and irrigation—played an important part. But the period, though thus politically unstable, was a most fruitful one in the development of Chinese civilization, particularly in the realm of thought.

During the third century B.C. there arose in northwestern China a great conqueror and organizer, Shih Huang Ti (to give him his later appellation), king of the aggressive state of Ch'in.³⁰ This man of genius subdued the other Chinese states and united them into a single centralized and bureaucratic empire, with himself as its absolute ruler—the most enduring political achievement ever wrought by man.³¹

Systems of government closely similar, even in their details, had arisen not long before in lands farther to the west—in Persia under Darius the Great, in India under Chandragupta Maurya. This new principle in state-building appeared in all three countries within a period of about three centuries, roughly 500–200 B.C. It did so, moreover, at successively later dates as we pass from the Near to the Far East.

With this founding of a centralized empire, the civilization of China, which became in time, incidentally, that of all Eastern Asia, was fairly launched on its great historical career.

In the foregoing paper we have purposely avoided attempts at interpretation, necessarily more or less subjective as these are. We have, on the contrary, simply stated ascertained facts, and allowed these to speak for themselves.

As we have seen, civilization appeared earliest in the Near East. There, certain animals were domesticated, certain plants brought under cultivation; there, too, various basic inventions were made and city-life first arose. To accomplish all this required a long period, probably of several thousand years.

In Eastern Asia we found things quite otherwise. Many of the above

³⁰ From the name of this state almost certainly came our own for the whole of China. Those who dispute this, usually on the ground that the latter name occurs (in India) earlier than the founding of the Ch'in empire, forget that the *state* of Ch'in had already annexed the eastern ends of both the overland routes which link China with the West.

³¹ The Chinese Empire lasted, in substantially the form devised for it by its creator, for over two thousand years—221 B.C.—A.D. 1911.

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culture traits appeared there too ; but they invariably did so far later, relatively speaking, at an already fairly advanced stage of evolution. Nothing has been found to suggest their independent origin there, while in certain instances we found definite evidence of their ultimate derivation from the West. These traits displayed in the Far East, moreover, just that archaic and fragmentary nature characteristic of marginal areas everywhere.

Mainly therefore, it would appear, to the stimulus imparted by cultural diffusions from the ancient Near East must be attributed the origin and fundamental type of that civilization which eventually took form in Eastern Asia. The case seems, in short, not to have been one of separate local invention, but of perfectly normal culture-drift, acting steadily, though most often imperceptibly, during hundreds, in some cases, even thousands, of years.

Roman Villa, Lockleys, Welwyn

by J. B. WARD PERKINS

THE Roman villa at Lockleys, Welwyn (the excavation of which was described in *Antiquaries Journal*, 1938, XVIII, 339-76), happened to provide more evidence than is usual of the character of the superstructures which once stood upon the surviving foundations. It has therefore seemed worth while to attempt a restoration-drawing of the house as it appeared in Roman times. The drawing, which is reproduced in the accompanying plate, is the work of Mr H. C. Lander, who has based it upon the results of the excavation, supplemented where necessary by analogies from other sites. It obviously cannot hope to claim complete accuracy of detail, but probably it does give a not wholly untrustworthy picture of a small middle-class native farmer's house in the late second or early third century A.D.

The restoration shows the house, viewed from the west, in the form in which it was rebuilt soon after the middle of the second century A.D. Its first-century predecessor was smaller and plainer. It had consisted simply of the rectangular central block, in front of which a row of timber uprights presumably supported the projection of the roof to form an open verandah. From the outside this building must have had very much the appearance of a large, half-timbered barn. The second-century rebuilding was extensive. Besides the re-decoration of the central block, it involved the addition of a projecting wing at either end of the façade and the replacement of the open timber verandah by a more substantial masonry construction.

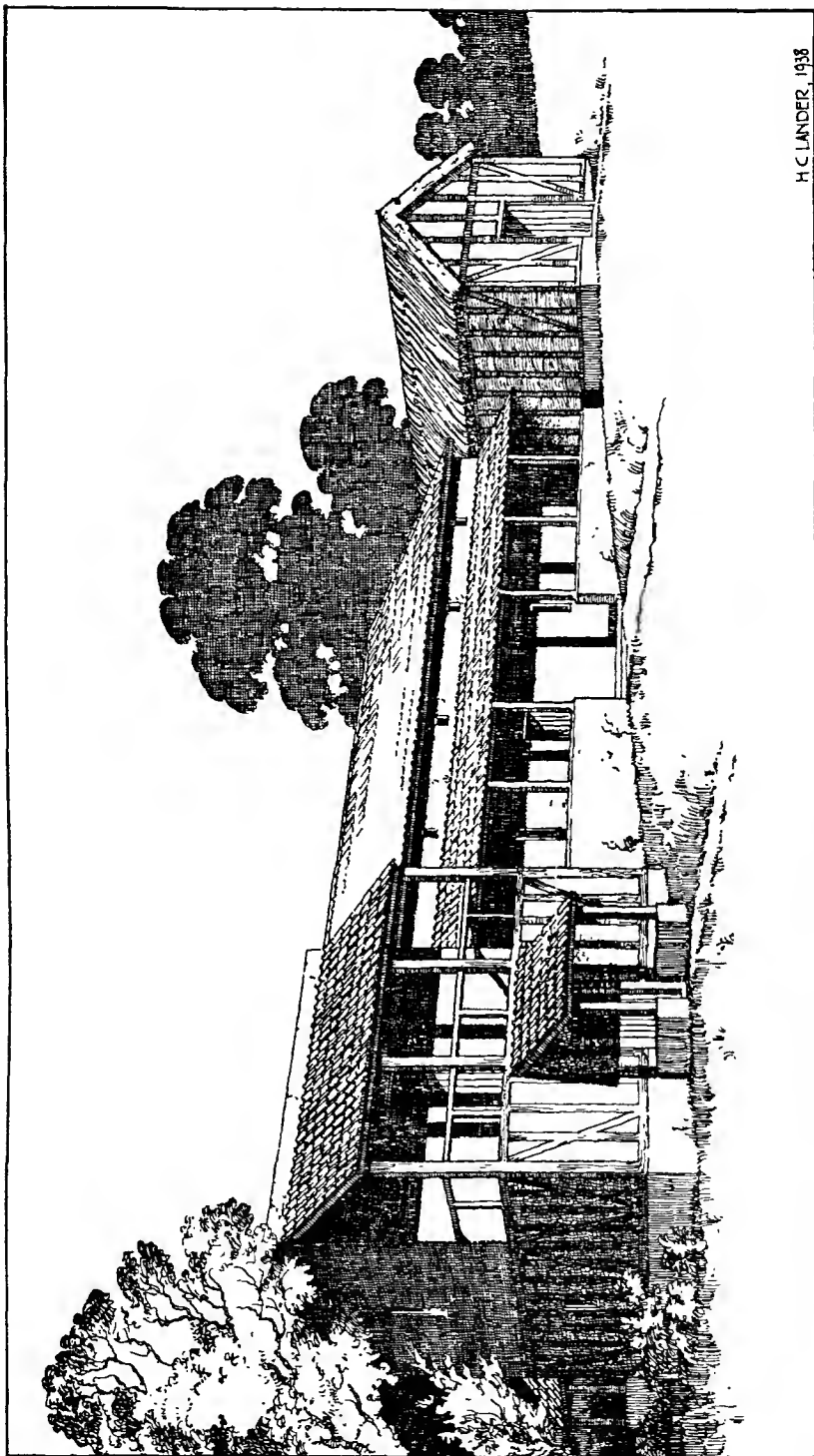
The building was almost certainly half-timbered throughout on substantial masonry foundations. The use of timber was demonstrated by the discovery of a charred beam in the débris of the collapsed wall of room 5 of the central block. The partition-walls of this block were also certainly of wood, for they were burnt down to foundation-level; and the collapsed débris of the two-storied room (no. 8) in the foreground contained a great deal of burnt wood and other matter, but very little masonry. Brick was used for bonding-courses in the necessarily rather elaborate foundations of this 'corner-tower', and also for the angles of the main block. But there is evidence to show that in the

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corner-tower, and therefore probably elsewhere, the upper parts of the walls were of some form of mud-construction. This use of mud and timber has survived until very recently in parts of the Home Counties, in Devonshire and in the *pisé-de-terre* farmhouses of northern France. It is capable of producing a comfortable and substantial building. It can be made more waterproof by the use of some external rendering, but this is not by any means essential.

The character of the central block was to some extent determined by the presence of a corridor in front. If its rooms were to receive any direct light other than from the back of the house (which was used as a rubbish-dump) the walls must have risen sufficiently high to allow for the insertion of windows above the roof of the corridor. Some part of the roof was tiled, for fragments of a number of roof-tiles were found ; whether any of it was thatched it is of course impossible to say. The corridor in front was probably half-colonnaded, for although the outer wall was continuous above foundation-level, it was considerably narrower than the other walls of the house. No trace was found of any columns, but these were probably of wood. In the centre of the corridor lay the main entrance. Of the rooms behind it only nos. 1-3 had elaborate flooring ; nos. 4 and 5 were roughly flagged with bricks, and this was evidently the part of the house reserved for the kitchen and perhaps for farm-purposes. The attribution is supported by the character of the pottery found here (*Antiquaries Journal*, 1938, XVIII, 349-50). The projecting south wing, of which only the barest foundations survive, was presumably of the same character as the adjacent rooms, and it is conjecturally so restored.

The most elaborate room in the house was no. 8 at the west corner. Owing to the slope of the ground the floor of this lay some 5 or 6 feet below that of the other rooms, and this fall was balanced by the addition of an upper room above it. This covered only one half of the room beneath, and presumably there was some form of verandah in front, probably, in view of the flat, concrete roof of the upper room, with a pent-roof rather than a gable. The lower part of this 'tower' was built of good flint masonry with brick bonding-courses, the upper part of timber and some form of mud-construction. The lower room had no communication with the rest of the house and was entered by a porch set in the middle of the front. Internally it was decorated with a tessellated floor and multi-coloured wall-plaster, and the upper room also had a plain, dark-red plaster. The disposition of the windows is of course conjectural.



RESTORATION-VIEW OF THE ROMAN VILLA, AT LOCKLEYS, WELWYN, IN THE SECOND CENTURY A.D.

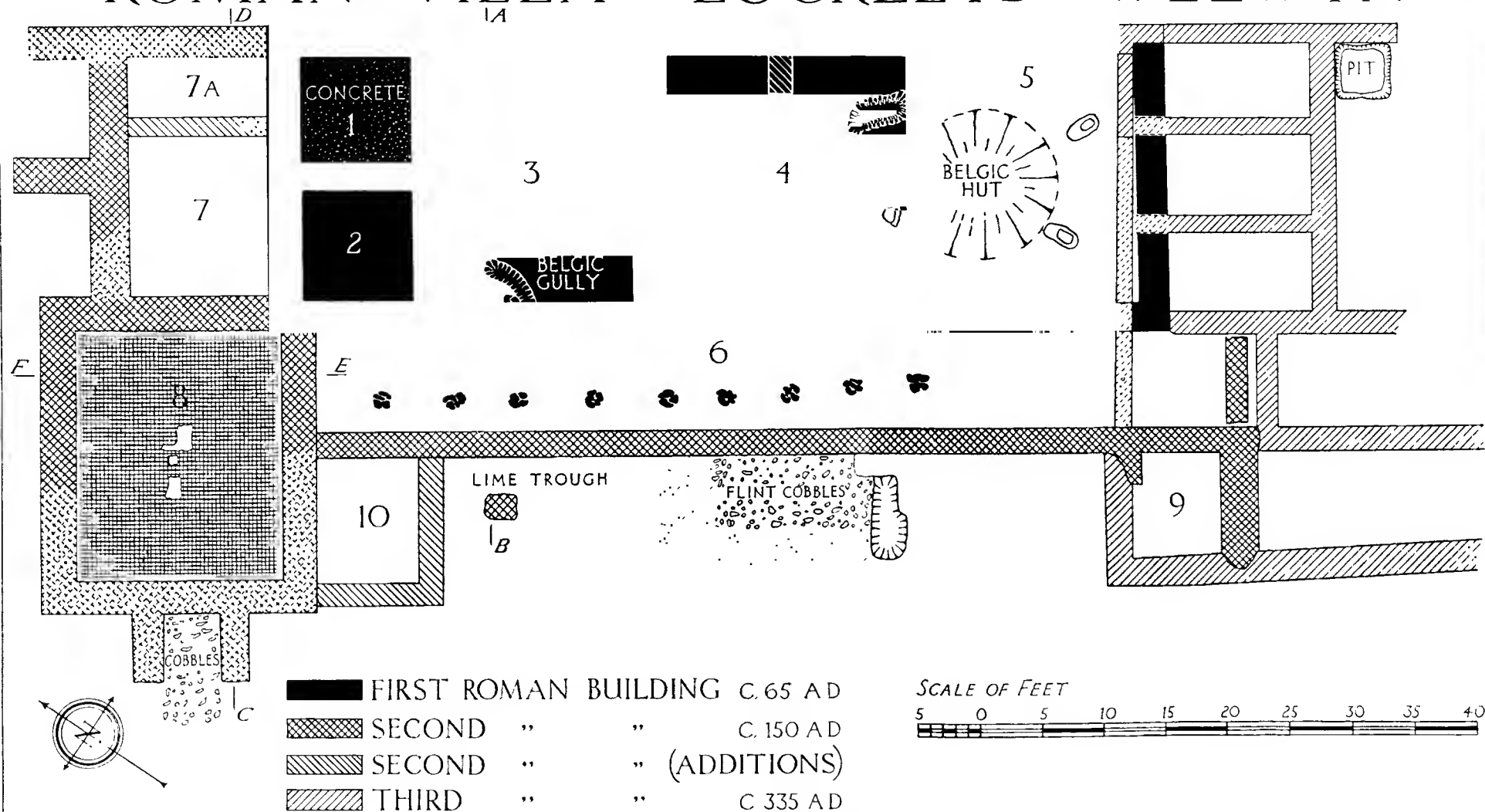
By courtesy of Mr Philip Cordier

H.C. LANDER, 1938

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No other buildings were found during the excavation. Portions of flue-tiles indicate however the existence of a separate bath-building: and within the circuit of the enclosing fence and ditch, which was traced to the south and west, there were no doubt other wooden farm-buildings, analogous to those identified in the villa at Ditchley, Oxon. (C. A. R. Radford, 'The Roman Villa at Ditchley', *Oxoniensia*, 1936, I, 24-69). To judge from its ground-plan the Lockleys villa was of a type common in Roman Britain. The existence of a second storey in the corner 'tower' may well be exceptional. It is amply explained in this case by the configuration of the ground, and its use elsewhere still requires demonstration. In other respects however the Lockleys villa probably does provide a fair picture of the type of small farmhouse that was the backbone of the Roman villa-system in this country.

ROMAN VILLA LOCKLEYS WELWYN



By courtesy of the Society of Antiquaries of London

Reviews

FANGKULTUR UND MEGALITHKULTUR IN DER SUDSKANDINAVISCHEN STEINZEIT. By OTTO RYDBECK. *Meddelanden från Lunds Universitets Historiska Museum*, no. 1, pp. 1-146, 35 figs., of *Bulletin de la Société Royale des Lettres de Lund*, vi, 1937-8. Price not stated.

In the last few years many first-rate works have been published on the Neolithic period in northern Europe. Sprockhoff's *Die Nordische Megalithkultur* and Nordman's *The Megalithic Culture of Northern Europe* have already been discussed in these pages,¹ and more recently Dr Brønsted has given us in volume 1 of his *Danmarks Oldtid*² the first detailed account of Denmark in the later Stone Age. In the present work Professor Rydbeck surveys the later Stone Age in southern Scandinavia, concentrating his attention on the south Swedish material, and in particular on the interrelation there of the Megalithic culture and what he terms the Fangkultur (Swedish Fångskultur)—the hunters, fishers and collectors usually known as the Wohnplatz or Sammler Culture. Rydbeck's book is a valuable and welcome addition to the recent literature in this field, and is the more stimulating in that it is often sharply critical of the views of Nordman and Brønsted.

Rydbeck first outlines the development of the classification of the Stone Age in northern Europe: he re-affirms Stjerna's doubts as to the validity of Montelius period 1 which has recently been reinstated by Brønsted, and does not allow the early date given by Brønsted to the pointed butt axeheads, to some of the corded beakers, and to the Verring single grave. He then gives a good account of the Swedish megaliths and publishes new distribution-maps which will now supersede the earlier maps of Montelius, Alin-Sarauw, and Åberg. The Swedish megaliths are concentrated in three main areas (1) the Falbygden area of Västergötland; (2) Bohuslän with the islands of Orust and Tjörn; and (3) Skåne, with some few tombs in Gotland and along the coast from Skåne north to Bohuslän. Rydbeck stresses the poverty of Sweden in megaliths when compared with Denmark: Skåne has only 30 dolmens and 50 passage-graves, Bohuslän has only 47 dolmens and 33 passage-graves, and the Falbygden area is the largest concentration with 234 passage-graves.

Nordman, faced with the difficult problem of finding an origin for the northern dolmen, concluded rather unsatisfactorily that it was the embodiment in northern Europe of the idea of communal burial in megalithic tombs diffused from western Europe. Rydbeck very properly criticizes this view and reverts to Montelius' position, stressing the existence of dolmens in Brittany, England,

¹ See Daniel, 'The Megalithic Tombs of Northern Europe', *ANTIQUITY*, 1938, xii, 297 ff.

² Copenhagen, 1938. (Vol. 1 reviewed *ANTIQUITY*, March 1940, pp. 88-91).

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Wales, Scotland and Ireland—but this view is no more satisfactory than Nordman's: it remains true that nowhere in western Europe can be found accurate parallels to all the morphological features embodied in the northern dolmen. Rydbeck realizes well that the grave-goods of the dolmens cannot be paralleled in western Europe. He cites the Breton collared flasks, but is inclined to see no connexion with northern Europe: he also quotes the pot from Liff's Low (Biggin) in Derbyshire as a possible collared flask; but as both Childe and Piggott have pointed out,³ this is rather to be regarded as a 'sport' in the Peterborough tradition.

Rydbeck develops here his theory of the multiple transgression of the Littorina sea which has now been generally accepted, and which emphasizes the contemporaneity of the late Mesolithic cultures with the first megaliths. He argues again for continuous land in the North Sea as late as the first megalithic movements, but neither this view nor his chronology seem likely to be accepted. Nordman put the beginning of the megalithic culture in northern Europe at a century or two before 2000 B.C.; Rydbeck pushes the beginning back to 2500 B.C. It is a great pity to find Rydbeck, and Brønsted too, reverting towards a Montelian chronology, and allowing a period of 200 or 300 years for Montelius period II, of whose separate existence he entertains no doubts. Rydbeck criticizes Brønsted's reinstatement of Montelius period I, but he pays scant attention to the implied criticisms of period II with which Brønsted's work provides us. Thus Brønsted lists only 57 dolmens in Denmark with grave-goods alleged to be earlier than the passage-graves; and it is surely most significant that whereas only 6 dolmens in Denmark have yielded grave-goods characteristic of the older passage-graves, no less than 25 have yielded grave-goods typical of the younger passage-graves. Rydbeck does not consider the implications of these facts brought out by Brønsted's maps, nor does he attempt to explain the occurrence of 'dolmenic' grave-goods in the Dutch and north-west German tombs of late period III and IV. It is a matter for regret that in such a careful study of the south Swedish Neolithic, Rydbeck did not include a detailed analysis of the grave-goods from the Swedish dolmens: it would have been most informative.

G. E. DANIEL.

FROM 'DAWN' TO THE 'ECLIPSE': the story of the Horse. By CECIL G. TREW. *Methuen*, 1939. pp. 142, 16 plates and 100 line illustrations. 12s 6d.

This is a book by an artist and lover of horses. It deals not only with the horse and its history, but also with all the relations of horse to man, thus conveniently assembling much material that would otherwise be somewhat

³ *Arch. Journ.*, 1931, p. 132.

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inaccessible. It gives an easily comprehensible and interesting account of facts relating purely to natural history which are perhaps somewhat off the ordinary beat of readers. The author's illustrations give effective support to the text and are of value in themselves, for he has shown much industry in drawing upon works and collections relating to natural history and the history of art and culture. Unfortunately, the fact that only English authors have been consulted makes the work rather one-sided: such important researches as those of Adametz, Antonius, Vetulani and others are ignored, and one even misses the name of such an authority as Ewart. The somewhat confused account of evidence for the Nubian wild ass being found on the island of Socotra needs correction, for the animals there are merely domestic asses run wild. Further, where the domestic horse is alleged to go back to only two wild species, it should at least have been stated that others hold different views. But these are small points, which concern the specialist alone, and do not mar the effect for the general reader.

The author develops the paleontological evolution of the horse from the Eocene five-toed terrier-sized *Phenacodus primaevus* and the somewhat later *Eohippus* of West America, the 'Dawn Horse', to the normal single-hoofed animal of today, and then treats of domestication. There were two separate types, the northern or Dun and the southern or Barb. The former subdivides into Przewalski's horse in the east and the Tarpan in the west; from these three types, either direct or through crossing, modern breeds evolved. There is an account of the horse in the Ancient East and among classical peoples, and a chapter on harness and accoutrements—bit, stirrup, saddle, etc. The last section is concerned exclusively with the horse in England; here the influence of the oriental breed and the evolution of the thoroughbred are well in the foreground, while the heavy horse is rather neglected. The book concludes with a comprehensive retrospect, and an idealistic picture of future development.

M. HILZHEIMER.

THE LABORS OF THE MONTHS IN ANTIQUE AND MEDIEVAL ART. By JAMES CARSON WEBSTER. Princeton Monographs in Art and Archaeology (Princeton), 1938. pp. 185, and 64 plates. \$10 post paid.

In the first three chapters an examination is made of the most important artistic representations of the seasons during late Roman times, the Dark Ages and in the Romanesque period. It is followed by certain literary exercises on the same theme; and perhaps the most valuable section of the work is a long catalogue of the representations of the seasons now surviving, with their exact locality and with notes on the significance of the actual figures and symbols portrayed. The 64 plates illustrate the sculptures, mosaics, etc., which are cited in the text.

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A corpus of illustrations of medieval life is thus presented, which is of value in many ways besides that for which it was assembled. It provides a further measure for assessing the debt of medieval art to the ancient world, both in the West and in the lands of the eastern Roman Empire. The illustrations offer material for studies on methods of husbandry, and country customs. We note that it is only in the English cycles that the occupation of weeding is portrayed: the 'green and pleasant land' seems to have changed little in this respect. Both author and publisher are to be congratulated on this book.

DINA P. DOBSON.

EXPLORATIONS IN EASTERN PALESTINE, III. By NELSON GLUECK.

Annual of the American Schools of Oriental Research, vols. XVIII-XIX, for 1937-9. *Published by the A.S.O.R., New Haven, 1939. pp. 288, plates, maps, and figures.*

This volume represents results obtained by field-work during the years 1936-8, and it should be said at once that the results are copious and valuable. It covers an area that is inaccessible, almost unknown, and yet full of remains of all periods. The present survey is a valuable pioneer reconnaissance carried out under the direction of the American School of Oriental Research with the co-operation of the Transjordan Antiquities Department and the Royal Air Force. The term 'Eastern *Palestine*' is puzzling, since the survey was confined to the region east of the river Jordan.

Transjordan is, perhaps, hardly better known today to the average European than was 18th-century Scotland to the average Englishman; but Pennant—Dr Glueck's opposite number in the 18th century—was without those modern instruments of research—the car, aeroplane, and camera—nor of course had he any archaeological basis with which to build upon and date his sites. Dr Glueck's narrative is packed with detailed information, presented in a strictly objective scientific form, so that the work of the excavator and air-photographer who will, we hope, some day follow him has been immensely facilitated.

A detailed review of such a work as this is quite impossible, particularly at a time like the present. We can only select one or two points of outstanding interest. Of these the most remarkable is the air-photograph on p. 152 of 'elaborately terraced and walled fields resembling tremendous checker-boards' at et-Telâh. The fields are rectangular and perfectly preserved in plan. The air-photograph, an oblique, hardly does justice to the subject; but we know only too well the technical difficulty of obtaining the best results during pioneer-work of this kind. A vertical photograph, or rather a series of such, taken when the sun is low, would be most illuminating. I saw similar walls in 1930 from the summit of Umm Keiss in the north of Transjordan, belonging probably to the

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Roman town of Bosrah, and appealed, though in vain, for an air-survey of them. Hardly less sensational is the Roman road leading from Kathrabbā to the Dead Sea, which in one place is constructed apparently in a series of hair-pin bends along a ridge between two small ravines. These photographs show us what amazing archaeological wealth is awaiting the first person who is rich and enterprising enough to explore Transjordan with an aeroplane and camera, and to do for it what Major Allen has done for England, namely, to make discoveries and record them with the necessary technical skill. They also cause us to wonder what is done with these R.A.F. negatives after they have served their purpose. They should be deposited in a central store-house, where prints can be made and supplied to archaeologists without undue difficulties or delays; otherwise the labour and expense of taking them will have been thrown away for lack of an expenditure that is relatively trifling. The responsibility for organizing some such scheme rests primarily upon British archaeologists.

O.G.S.C.

ANGLO-SAXON CAMBRIDGESHIRE. By T. C. LETHBRIDGE. Reprinted from the Victoria County History of Cambridgeshire and the Isle of Ely, vol. 1, 1938. *Price not stated.*

The author acknowledges his debt to Sir Cyril Fox's *Archaeology of the Cambridge Region*. He has not duplicated the information therein, but has rather concentrated on material discovered since the publication of Sir Cyril's book.

A large part of the chapter is concerned with Anglo-Saxon burials, both pagan and probably Christian, and with the consideration of the finds associated with them. There are also useful notes on the relations between the remains of Romans and Anglo-Saxons; on the sites of cemeteries and houses; and on weapons and their incidence. There is also a list of Anglo-Saxon sculptures, and another of the numerous finds in the county of the Viking period.

The illustrations include the author's own sketches, and some good photographs of pots, weapons and jewellery. The sites and finds are plotted on a coloured quarter-inch map in a very conspicuous way.

Mr Lethbridge is able to supply references to papers which he has already published on this subject, and the reader feels throughout that this is a summary based on far wider information and knowledge than can appear in the limited space which is allotted.

DINA P. DOBSON.

EGYPTIAN ARCHITECTURE. By FLINDERS PETRIE. *Bernard Quaritch*, 1938. *pp.* 95 *and* 34 *plates.* 7s 6d.

Even a life as long and as productive as Petrie's is too short to accomplish everything; other scholars have contributed so much to the history of Egyptian

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culture that no one man can have mastered every phase of Egyptology. Such is always the dilemma of archaeological scholarship, and, as Petrie says, *Egyptian Architecture* was written largely from personal observation. The treatment of the subject is further limited by the author's interest in only the engineering aspects of Nilotic building methods. In defining the 'scope of architecture', he chooses a quotation from Vitruvius which reads, 'Architecture consists of three branches, namely, building, dialling and mechanics'. Although the quotation has its limitations, and does not express the Roman architect's realization that architecture is also an aesthetic and social art, still it clearly indicates Petrie's approach to the subject.

Throughout the book the value of the ideas and information is frequently lessened because the author seems too pressed for time to make his generalizations express exactly what he intended. In the chapter on 'Brickwork' he writes, 'It will be seen that all these bricks are half as wide as the length, also the width may be greater than half the length'. The clarity of this sentence is still further lessened by the fact that, according to his table of brick dimensions, the width may also be somewhat less than half the length. In the same way the sentence, 'an unplastered brick wall will readily rock to and fro; but with a coat of mud plaster on each face it becomes a girder with two faces and solid ties between', needs both qualification and clarification. On the other hand, the exposition of how the Egyptian builders attained a uniform slope on all sides of a mastaba is typical of his insight into Egyptian methods of building. Also he offers a better explanation than any other writer why it was that the Egyptians so frequently built their walls with concave and convex courses.

When discussing 'Wood in Brickwork', he writes, 'Straight beams were very rarely let into walls, as foreign wood was too costly to be used; but it is usual in Arab times as a bond or tie'. In view of the conservatism of Egyptian habits, it is most unlikely that the idea of wood bonding was introduced by the Arabs, and it is doubtful if wood was less expensive in Arab times. As early as the Third Dynasty, the records tell of forty ships laden with timber which were brought to Egypt. In fact, the use of successive bands of wood bonding in the brick walls of Egyptian forts, and in the houses at Karanis and Soknopaiou Nesos, prove that it was a customary means of wall construction. At Amarna, recent excavations have indicated the use of horizontal bands of wood, about a metre apart. When Petrie first published the house models of Rifeh, he suggested that the horizontal lines of red paint on the houses represented brickwork. Inasmuch, however, as red was the Egyptian symbol for wood, and since Egyptian bricks were always grey-black, rather than an English red, it is probable that the red lines indicate bands of wood bonding. The chapter entitled 'Reed, Palm and Wood' contains many pertinent observations on the importance

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of 'organic materials' in the beginnings of Egyptian architecture. Granting, however, that 'wood was largely used in early constructions', it is somewhat misleading to say that 'the great royal tombs were entirely of massive timbering' (p. 17). Regarding tombs, Petrie does not mention the very recent find of the actual tomb of Menes at Saqqara, and so cannot discuss its bearing upon his identification of the Royal Tombs at Abydos. In order to account for the important and extensive use of wood during the early history of Egyptian architecture, he offers the statement by Floyer that there was much more wood in ancient times, 'before the camel extirpated the desert flora'. No one, of course, likes the camel; but should not this particular responsibility be shared with climatic changes which were producing a desiccation in both Africa and Asia?

The chapters 'Stonework', 'Transport' and 'Stone Construction' contain many valuable observations upon Nilotic building traditions. Petrie's long experience supervising native workmen makes his explanation of Egyptian methods of handling great blocks of stone most illuminating. At the same time many of his condensed statements of fact are questionable. A. Lucas, the author of *Ancient Egyptian Materials and Industries*, would not agree with his statement that the Egyptians of the Old and Middle Kingdoms hardened their copper for stone cutting by arsenic, for Lucas writes, 'The only constituent added intentionally to copper in Egypt was at first tin . . . and at a later period lead. . . .'. It is an overstatement to say that the 'dovetails or cramps were usual in stonework', especially when it is later qualified by the sentence 'it is doubtful if ever cramps were much used in limestone work' (p. 48). In fact it is an exaggeration to say that 'the sandstone buildings of the 18th and later dynasties may be seen to have every block of walls and roofs cramped to the next'.

The treatment of 'Forms of Support' is far from exhaustive; although it gives a series of tables showing the dimensional variations of different types of supports during the successive periods of Egyptian architecture. The measurements are largely estimated from photographs and suggest a rule of thumb which lessens the accuracy of the conclusions. Some readers will find it confusing to read that the Zoser shafts at Saqqara are 'Hathor columns', although this interpretation has been advanced by several scholars, especially when Firth and Lauer have shown that the bosses on these shafts, which to Petrie suggest the breasts of the Cow-goddess, were presumably supports for a wooden bracket. In the same way the chapters on 'Strength of Materials' and 'Roofing' would be much more valuable if it were not for the haunting suspicion, born of the fact that the dimensions in the different tables do not always agree, that the data were somewhat hurriedly compiled.

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The reviewer cannot agree that the arched roofs in the rock-cut tombs at Beni-Hasan were 'most likely copies from brickwork'; instead, it is now generally thought that these interiors are a sculptured reproduction of the wooden hoop roof, covered with matting, of the houses of the Oryx district. The same difference of interpretation applies to the Rifeh 'soul houses', which Petrie calls models of 'Peasants' Houses'. He describes them as frequently reproducing dwellings with actual arched roofs of brick; again, it fits the evidence of domestic architecture in Egypt to consider them as reproductions of hoop construction. In the last chapter, on 'Plans', even with the material limited to what had been acquired by first-hand experience, it was attempting too much to compress houses, mansions, villas, palaces, temples and tombs into thirteen and a half octavo pages. After reading Petrie's letter at the end of the book, however, one is ready to overlook all the limitations of *Egyptian Architecture*. Instead one can only feel the deepest sympathy for the aged scholar's determination to raise money in order to carry on his excavations in Palestine.

E. BALDWIN SMITH.

THE BAILIWICK OF JERSEY. By JACQUETTA HAWKES. *Société Jersiaise, Jersey*, 1939. pp. xvii, 320. 25s.

This is the second volume of the *Archaeology of the Channel Islands* and completes the work commenced by Mr T. D. Kendrick's *Bailiwick of Guernsey* (1928).*

The contents follow generally the arrangement of Mr Kendrick's volume—a general survey of the archaeology of the island; a geological and archaeological survey of the Quaternary period; finds and sites arranged by types and divided into Megalithic, and post-Megalithic; and a descriptive catalogue of sites. The last occupies more than half the volume, and is based in part on notes made by Mr Kendrick. The careful summary of such data as are reliably recorded for each excavated site places future discussion of the problems of Jersey on a sure foundation. Parts II and III include a number of critical and comparative essays on particular aspects of the prehistory of the island which are a valuable supplement to the general account in the introduction.

The archaeological record of Jersey is singularly patchy, at least so far as it has yet been revealed by intensive, if unscientific, excavation. It begins in the Middle Palaeolithic, when Jersey was certainly a part of the continent. Thereafter a long gap occurs until the Megalithic period, when the author considers it possible that the ten-fathom channel, which now divides the island from France, was again elevated above sea level. After a long continuing Megalithic period Jersey sank to a relatively low cultural level, as would befit an area which

* Reviewed ANTIQUITY, 1930, IV, 126.

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was again an island, and one by then occupying no important position on a route of maritime adventure.

It is thus in its Megalithic period that the archaeological significance of Jersey is greatest, and for that this book is of the first importance. It presents intriguing problems, notable among which is the contrast which the author is able to point between Jersey and Guernsey. Jersey produces pottery of Chassey affinities, while vase-supports are the predominant furniture of the great tombs; Grand Pressigny flint is common; and there is at least one port-hole cist. In Guernsey all these cultural traits are absent, or virtually absent. Beakers, which seem to be the primary furniture of the great tombs in Guernsey, occur sparsely in Jersey except at one site which was probably a long cist. Thus while Guernsey's culture is clearly of Atlantic origin, much of Jersey's might be derived either from Brittany or from Central France. It is tempting to link this fact with Jersey's supposed peninsular situation and to infer influence from the south and east which did not reach the insular Guernsey. Mrs Hawkes is inclined to yield to this temptation, but it is questionable whether it ought not to be resisted.

We should be on firmer ground if we knew the culture sequence, and in particular the pottery sequence, for the island. Most valuable light is thrown on this by an analysis of the finds from the unpublished occupation-site of the Pinnacle, the only site in Jersey for which reasonably reliable stratification evidence exists. There, pottery of Chassey affinity occurred in a determinate stratum below an occupation-site producing a finger-tipped, applied band-ware, a few beaker sherds and Grand Pressigny flint. While the Chassey-like pottery does not occur at other sites it is presumably contemporary with the vase supports which form the principal furniture of the great chamber-tombs.

It seems therefore that the earliest pottery both at the Pinnacle and in the chamber-tombs was of Chassey affinities, and that this preceded beakers. Despite the similarity which Mrs Hawkes points out between this Chassey ware and that from the earliest occupation of Fort Harrouard in southeastern Normandy, it would not be impossible, as she observes, to derive this earliest material culture from Morbihan (Er Lannic and Croh-Collé), and to suppose that Jersey was first repopulated, as Guernsey seems to have been first populated, by the sea route from southern Brittany. The tombs must be so derived, since they have no analogues in the neighbouring areas of Normandy, and, on the principle of economy in hypothesis, it is questionable to postulate two irruptions of closely related cultures into this small area from different directions at the same time.

Analysis of the undecorated, round-bottomed pottery produces only inconclusive results. This pottery appears in the lowest level at the Pinnacle and in some tombs. In form it can be paralleled in more than one area

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and in particular at Er Lannic in Brittany, where it occurs with vase-supports. Mr Kendrick judged the similar vessels in Guernsey to be not earlier than beakers and not primary in chamber tombs. In Jersey they must be as early as the Chassey-like ware, but evidence is lacking that they were any earlier. They occur indeed as the sole furniture of the 'beehive hut' at La Sergenté, which Mrs Hawkes must be right in recognizing as a corbelled tomb, but the belief that a chamber tomb is early because it is corbelled is on present knowledge an act of faith.

Another element in the pottery sequence which is probably contemporary with beakers is the 'Jersey bowl'. This is a flat-bottomed, hollow-necked vessel with a relatively low carination, above which is a band of decoration composed of groups of horizontal incised lines arranged in panels. Mrs Hawkes is doubtless right in regarding this singularly uniform type as a local development; but the band of decoration is a common feature in Languedoc, where it occurs in the rock-cut tomb of Arnaud near Arles and in numerous caves (St. Vérédème, St. Joseph, la Sartanette, St. Anastasie). From the absence of such decoration along the Rhone route it seems likely that this pattern reached Jersey by the Garonne and the Atlantic.

Valuable discussion is given to the finger-tip, applied-band pottery, which occurs stratified with beakers and Grand Pressigny flint at the Pinnacle site. This is associated with the finger-tip and nail-ware of the 'upper neolithic' level at Fort Harrouard, but it is not clear that applied bands occur at that site. This type of ware stretches from Spain across the Midi to Italy and Macedonia, and extends up the Rhone to Chassey and thence, sporadically, to northeast France and southwest Germany; in the west it reaches Peu Richard near the mouth of the Garonne. It is preceded in Languedoc by the plain and the groove-decorated families which already embody applied cordons, a feature occurring, in the shape of applied strips, on Breton carinated bowls. Its area of fullest development was the Pyrenees, where finger-tipped bands garlanded big jars and flower pots and ultimately came to be enriched with clay rosettes.

Mrs Hawkes will not allow the Atlantic route, with its severe and indeed religious traditions, to have been the channel by which these ceramic extravagances reached the northwest. Their appearance in the Orkneys in a form which Professor Childe long ago pointed out to be Pyrenean is, however, difficult to explain otherwise now that at last it is permitted to claim Skara Brae as an Early Bronze Age site. The still more flamboyant form of the style which appears on the Irish encrusted urns corresponds closely with the latest Pyrenean developments. And it is at least possible that Wessex owes the applied band style of Woodhenge to the same Atlantic source, though it is mixed at that site with the grooved and dotted style which at Skara Brae preceded it.

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If this be true for Britain it is possible that Jersey also derived its applied band pottery from the same Pyrenean source. Such an origin would certainly seem the most probable one for the well-known Jersey grape cup, which has been claimed as a prototype of those in Wessex, since it is only in the Pyrenean area that all-over knob decoration elsewhere occurs. Further discussion is required, and much fuller publication of material, before firm conclusions can be reached on the channels of diffusion of this neglected pottery style. Mrs Hawkes has directed attention to its importance for an understanding of the Early and Middle Bronze Ages.

Reviewing the cultural sequence as a whole it seems permissible to regard Jersey, as Guernsey must be regarded, as a maritime settlement from Morbihan. It was a slightly earlier settlement than Guernsey, before the Breton Chassey wares had given place to beakers. It maintained contact with the Atlantic route and in due course received thence beakers which are of markedly Pyrenean and Galician type. Later it may possibly have received its finger-tip, applied-band ware by that highway of Mediterranean peoples and cultures. Later still it received the biconical handled jars which are typical of Brittany and Cornwall. At some time in the British Middle Bronze Age the traffic had ceased and thereafter the Channel Islands declined into provincial areas of the Late Bronze and Early Iron Age cultures of northern France.

LINDSAY SCOTT.

THE VICTORIA HISTORY OF THE COUNTY OF OXFORD. *Edited by* L. F. SALZMAN. Vol. I. *Published for the University of London Institute of Historical Research by the Oxford University Press, 1939. pp. 498, maps and illustrations.*

This volume contains sections on geology, botany, zoology, what is still called 'Early Man' (i.e. prehistory), Romano-British remains, Anglo-Saxon remains, Domesday Survey, Political History, Schools.

In the Natural History section zoology occupies 166 pages, exactly a third of the volume, but not an excessive amount when it is remembered (1) that the Victoria Histories usually have at least five volumes, of which four are exclusively archaeological and historical; (2) that 'county zoology' is now decidedly a neglected subject, in spite of occasional efforts such as the 'survey by a team of observers who studied mice, voles and shrews in Bagley Wood between the years 1925 and 1928' (p. 217).

All the sections are by students and scholars of authority, several of very high authority and well acquainted with the region, which has been officially neglected by the adjacent University.

Some of the contributions suffer from the traditional narrative form in

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which they are cast, a legacy from Victorian days. But the vagueness of early records, the regrettable rarity of properly conducted excavations, and the absence of intensive regional study no doubt make any more adequate treatment in this volume almost impossible. The destruction of the evidence itself by gravel-diggers and aerodromes is now removing the basis upon which the prehistory of the Oxford district might have been built. O.G.S.C.

CONTRIBUTIONS TO THE GEOGRAPHY OF EGYPT. By JOHN BALL. *Cairo : Government Press, Bulaq, 1939. pp. 308, maps and illustrations. 50 piastres (10s 6d).*

This fine book is modestly described by the author as containing ' the results of a series of studies that I have made during the last few years on various subjects connected with the geography of Egypt '. It deals in succession ' with the geographical changes that have taken place in Egypt during past geological ages ; the river-terraces of the Nile Valley and the evidences they furnish as to past changes in the relative levels of land and sea in the Egyptian region ; the high level (early Sebilian) silts of the Nile Valley in Upper Egypt and the evidences for the former existence of a great lake in the Sudd region of the Sudan ; the solid matter transported by the Nile in solution and suspension respectively ; the alluvial land of Egypt ; the physical history of the Faiyùm and its lake ; and the Birket Quarùn fishery '.

It is in actual fact the best book to recommend to anyone who wishes to understand the physical background against which the age-long history of Egypt has been enacted. In our opinion, it is a book that the intelligent tourist and the archaeologist should have with them in the country ; the maps alone would make it worth while to including it in one's luggage—they are up-to-date and illuminating. A comparison of the geological map with an earlier one in the possession of the reviewer (undated but evidently published in the first decade of this century), on the scale of 1 : 2,000,000, shows that the latter was on the whole fairly accurate as far as it went. Progress since then has enabled gaps then marked 'unexplored' to be filled in ; the whole of southwest Egypt, between Gilf Kebir and Dunqul, conveniently covered in the older map by the colour-index, is now occupied with geological and geographical information not then available because no one had explored these regions, and Owenat had not yet been discovered. As many of us know, Dr Ball himself is personally responsible for much of this exploration and survey, carried out in the face of difficulties and discouragement.

Archaeologists will particularly welcome the account of the different levels of the Nile and Mediterranean and of Lake Moeris ; the account of the Faiyùm is very full and illustrated by a really beautiful layered map (1 : 375,000, from

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the visual scale) showing the sites of the Ptolemaic towns. We wish that every future archaeological excavation report dealing with that area and period would make an effort to reprint it, even at the cost of omitting a few half-tone illustrations.

The book is written in a style which is clear and readable, and assumes a knowledge of only such technical geological terms as should be familiar to every educated person. It answers concisely the sort of questions that occur to the casual visitor ; such as the origin and nature of the series of limestone ridges that run parallel to the coast west of Alexandria, and even outcrop strangely in Alexandria itself. They 'almost certainly originated from the consolidation of ancient littoral sand-dunes', formed at a time, about 12,000 or 10,000 B.C. (the Sebilian period), when the Mediterranean stood at least 43 metres lower than today, and the climate was even drier. These ridges abound in archaeological remains which have never been properly investigated (see *Proc. Prehistoric Society*, 1938, p. 238).

This is a very inadequate account of a scholarly but most readable book ; we can only hope that it may arouse interest in the book itself and increase its sale.

O.G.S.C.

THE HISTORY OF THE FORMER HAN DYNASTY. By PAN KU.
Vol. I. A critical translation with annotations by HOMER H. DUBS. *Kegan Paul*, 1938. pp. xiv, 339.

This is the first instalment of a complete English version of the important *Ch'ien han shu*, or at least of the annals which form the first part of that work, for the translation of the equally important second and third parts does not seem to be contemplated. This great and valuable piece of work has been undertaken at the invitation of the American Council of Learned Societies, and it is hard for those who are concerned with the Far East to be too grateful to those who have planned, supported, and are carrying out this scheme for placing complete versions of the great early historical documents of the Chinese at their service. It might seem invidious to compare the present work with Chavannes' *Mémoires Historiques*, but in one respect at least this has the advantage over that, since it has on each page the Chinese text side by side with the English version ; and generally the work seems to be satisfactorily done. The translation is, however, needlessly marred by the excessive use of square brackets, as many as twenty-one pairs on half a page ; and it may be hoped that the future volumes will use this device more sparingly. In conclusion it is most earnestly to be desired that this preliminary volume may receive such a welcome as it deserves and as will ensure the completion of this work and the continuance of the excellent scheme.

A. C. MOULE.

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THE SKY-RELIGION IN EGYPT, ITS ANTIQUITY AND EFFECTS.

By G. A. WAINWRIGHT. *Cambridge University Press*, 1938. pp. xvi, 121. 8s 6d.

The foundations upon which Mr Wainwright seeks to establish his thesis go very far back, in fact to Palaeolithic times, when much of the Sahara, now the high desert on each side of the Nile, was savannah and parkland swarming with game. At that period the Nile, if it existed as we know it today, was of little account in the life of the people, for they occupied what is now the high desert plateau. It is then not surprising that the sky religion of which Mr Wainwright writes is not the sun cult of Egypt that we all know—this was much later—but a cult of the blue sky and of rain by Palaeolithic man, a cult which the author recognizes as surviving in attenuated form through the predynastic civilizations into the full dynastic civilization of Egypt.

We all love a bold hypothesis, and if, as the present reviewer has shown, the beliefs of the New Empire (probably very much older than this) still flourish in the Cairo bazaars, it might be argued that there is no reason why cults of the highest antiquity should not survive into historic times. But such argument ignores the total change in mode of life between even late palaeolithic hunters and corn-growing man of the Nile Valley, so that, although it is not impossible to think of European examples hinting at a possibly similar overlap, it is probably wiser to set aside as not proven the author's Palaeolithic origins and to consider quite a different matter, the evidence he adduces as to the cult of Seth in sensibly later times.

It is a main part of Mr Wainwright's argument that the god, or chief god, of the old sky religion was Seth, particularly concerned with rain and weather, while Osiris, the god of the settled Nile valley and a new mode of life—for the two gods did not fuse—became the successful rival of Seth, whose worship he increasingly superseded, the older cult changing its form yet lingering in folk belief, as older faiths commonly do when in contact with younger rivals better adapted to a new environment. The author sheds new light on the importance of these old features, and the main purpose of the book is to dissect out these survivals, to consider the metamorphoses they underwent, to study their significance, and to group them into a coherent scheme.

Associated with the old sky and rain god was the king, a divine king, apparently very much on the present day Nilotic pattern, who, like a Shilluk king, was slain ceremonially, though in Egypt Mr Wainwright thinks he was killed by burning. Whether this were so or not, the *Pyramid Texts* offer evidence of identification of Seth and the Pharaoh, both of whom were liable to death and yet, in the *Texts*, successfully escaped it.

Now there is no doubt that the Pharaoh was a corn king, above all

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concerned with irrigation (witness the well-known cutting of the dyke and grain-sowing scenes on the Hieraconpolis mace-heads). An ingenious argument suggests that the Hoeing of Earth ceremonies of the eighteenth and nineteenth dynasties incorporated the blood of Seth, or at any rate of his companions, with the newly turned clods.

' Seth sacrifices clearly took place with a view to fertilizing the earth, and in the beginning the ruler had played the part of the god. A remarkably and hitherto unparalleled text has just been published by Gardiner. . . . Among other things it shows that as late as the Nineteenth Dynasty a section of the Egyptians were known to be " Followers of Seth ", Typhonians, by certain marks and characteristics. Of such it is said: " The god in him is Seth ", and he declares himself on at least one occasion by the redness of his devotee's eyes '.

So the evidence is built up, and it becomes clear that the official and religious records of the Pharaohs enshrine the cult of old sky and storm god responsible for the fertility of the land and the health of people. The evidence is greatly strengthened by the folk beliefs of Egypt transmitted to us by the classical authors, as when Plutarch records that the animals in whom Typhon-Seth were incarnate were held responsible for the health of the people and for water for their crops. In fact Mr Wainwright gets a great deal out of the classical authors, and his collection and critical juxtaposition of their stories is one of the prime merits of this most interesting work.

C. G. SELIGMAN.

WHITE HORSE HILL AND SURROUNDING COUNTRY. By L. V.

GRINSELL. *London: Saint Catherine Press, 1939. pp. 66, 7 illustrations, map. 4s 6d.*

This book is in the best tradition of English topographical studies, and should be bought by all who love the Wessex downs, or what little remains of them. It differs from the ordinary guide-book compilation in the fact that Mr Grinsell is a serious student who has specialized in the study of barrows and made some valuable discoveries of his own. Two of them are in this district (pp. 19, 23). It contains, so far as we can judge, only a few errors and those quite trivial; there are a few things omitted that might have been inserted, but that can be said of almost any book like this. Three of Major Allen's air-photographs are reproduced; the technical excellence and value of these are now so well known to all that further comment is needless.

When writing a review of any book one has to give readers some idea of its contents and to appraise its value. If one then proceeds to criticize, there is a risk of conveying a wholly false impression if a list of alleged shortcomings is given. Such lists could be compiled by any reviewer sufficiently well acquainted with his subject; let it at once be clear that the few criticisms here made must

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not be allowed to count at all seriously against the real excellence and high archaeological standard achieved by the author.

The little book deals with the field-archaeology of a rich downland region ; it breathes the open air, even in the list of contents—the White Horse, hill-forts, Dragon Hill, Wayland's Smithy (a chambered long barrow), the Lambourne Seven Barrows, Celtic fields, strip-lynchets, the Ridgeway and Icknield way, the sarsens, the Blowing Stone. Perhaps the most strange omission is the splendid system of Celtic fields on Fognam Down, just outside Ashdown Park. This is all the more remarkable because we are sure the author knows all about it ; it has been photographed by Major Allen, and is traversed by the road from Lambourne to Ashbury. It is one of the finest examples in existence, is easily accessible, and is just the thing to show the budding field-archaeologist for whom the book is intended. With them is associated a small square earthwork, a probably contemporary pond (now dry) with a linear earthwork followed by the county boundary—this last an interesting and suggestive feature. There are also some nice hut-platforms, and the whole area is strewn with Romano-British potsherds.

The bank round Ashdown Copse is later than the Celtic fields and, as Mr Grinsell says, probably medieval. It was almost certainly made by the Glastonbury monks who owned the manor of Ashbury. It was quite normal to enclose such woods as this with a ditch and bank, and it is probable that documentary evidence of this could be found.

The derivation of 'sarsen' from 'saracen' is undoubtedly correct, and the other two might well be ignored. Saracens were known in medieval times, and it is surely illogical to deny this derivation on the ground that the stones 'must have had a name before the Saracens were heard of in this country' (p. 33).

We miss, in the chapter on the White Horse, that pleasant old Wessex rhyme about King Alfred and 'they warshurds (?) the Danes'.

May not the name 'Dragon Hill' be from the White Horse itself? This might well be called a dragon by the country-folk. Any connexion with the purely literary and Welsh Pendragon is rightly set aside by the author.

On p. 50 'Flagaflora' should be 'faga flora' (spotted floor).

But these are trifles. We are indebted to both author and publisher for a charming book ; may we add a suggestion to both that similar (but perhaps more ambitious) books could be written on such subjects as the Icknield Way (and its associated but distinct branches, Ashwell Street and the Ridgeway), and Wansdyke? To the future author of such books we would throw the bait of a delightful tramping holiday ; to the publisher (knowing publishers of old !) the lure of good and steady sales. There is a very definite need of books like this by informed, reliable field-archaeologists, and they would sell. O.G.S.C.

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THE ALUM FARM, with a history of the alum trade in Northeast Yorkshire.

By R. B. TURTON. *Whitby: Horne*, 1938. pp. 299. 12s 6d.

A detailed account of the establishment of the alum trade in England in the 16th and 17th centuries is given. The State took a great part in the foundation of this useful industry, and the many problems arising from its protection were dealt with in a more or less satisfactory way. As the author says: 'There is hardly any aspect of the vicissitudes of modern industry upon which this history does not throw a light'.

The manufacture of alum was carried on in Dorset, Yorkshire and Lancashire and Ireland. It may not be generally known that Alum Bay in the Isle of Wight and Alum Chine in Dorset owe their names to the early trade in this mineral.

There is a chapter on the Chaloner family, who were closely associated with the alum trade. The book is full of documented details that should be of great interest to persons concerned with the economic history of the period and the districts concerned.

DINA P. DOBSON.

THE EXCAVATION OF TELL BEIT MIRSIM. II. THE BRONZE AGE.

By W. F. ALBRIGHT. *Annual of the American Schools of Oriental Research*, xvii. *New Haven*, 1938. pp. 96 and 56 plates.

Volume II is devoted to the architectural and non-ceramic remains of the Bronze Age; the pottery has already been analysed in detail in vols. I and IA, but the author here revises his datings in the light of publications subsequent to 1933. Seven of the nine strata, lettered from the top downwards, are described; the last two being Iron Age, are postponed to vol. IV. The oldest occupation is represented by a thin deposit on rock comprising flint sickle-teeth and knives and pottery, comparable to that from tomb A at Jericho and assigned to the latter part of the third millennium B.C. Town H was already surrounded by a wall, founded on the debris of the previous occupations; it dates from about 2000 B.C., when nomadic tribes from the desert were settling down in Palestine. When the process was completed the settlers built the Middle Bronze Age II towns G-F. G was defended by a stone glacis, 3.20 m. wide and re-inforced at intervals by towers. No estimate is given of the area of this—or any other—settlement. Copper was now worked on the site since a one-piece stone mould for flat axes as well as a few copper pins and chisels was recovered. Though these settlements were contemporary with the Middle Kingdom, no Egyptian imports are recorded here.

In the next period, E, the stone glacis was replaced by a rampart of *terre pisée*. In a footnote Albright defends his thesis that this type of fortification is distinctively Hyksos, but admits that his theory that it was introduced by

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Indo-Iranian migrations is not demonstrated. In D the citizens returned to the stone glacis construction. One gate was partly exposed, but the plan on plate 54 is far from clear and gives the impression that the reconstruction is based on rather slender evidence. The principal house recovered was of the courtyard type and two-storeyed. A number of primitively shaped copper tools, more one-piece stone moulds, two limestone 'crucibles' and part of an ingot of Minoan-Cypriote form indicate an expansion of the local metal industry. The 'crucibles' were about 25 cm. in internal diameter and 10 cm. deep with a duct running out obliquely from the bottom. No trace of metal was observed on them and they look like some sort of oil mill. The stone pommels of the daggers belong to the Egyptian-Minoan series and might have yielded useful comparisons with Aegean types had section drawings accompanied the photographs. An ivory teetotum, of truncated pyramidal form, playing men (pyramidal and tetrahedral), and part of the inlay of a gaming board formed the appurtenances of a game which Albright now agrees originated in Sumer. Connexions with Egypt are demonstrated by scarabs. A bone inlay, engraved with a lively representation of a running fawn, and the lower part of a stela, depicting a 'Serpent Goddess', illustrate the native art of Palestine before 1550 B.C.

Town D presumably fell when the Egyptians conquered Palestine. Its site is thought to have lain waste for a century or two. Thereafter town C was erected. Though it may have lasted for more than two centuries, it yielded far less interesting material than its forerunners. No tombs have been found at Tell Beit Mirsim so that show-pieces have been scarce. If thus disappointing to the collector, from the scientific point of view the accurate determination of the ceramic and architectural sequence makes the site very important. A fifth campaign is, however, needed to complete the record, but has been repeatedly postponed owing to political difficulties.

V. G. CHILDE.

KRETISCHE KUNST: Versuch einer Deutung. By G. A. S. SNIJDER. Berlin, Verlag Gebr. Mann, 1936. pp. 174, and 32 pages of plates. RM. 39.00 (export, RM. 29.25).

The moderns have always felt uneasy before Minoan art, as something unfamiliar and partly incomprehensible. Is it, or is it not, the earliest 'European' art? Professor Snijder, the Director of the Allard-Pierson Museum at Amsterdam, has given us a new 'attempt at interpretation' by going to the Marburg school of psychologists for his solution. E. Jaensch and his followers have worked on the demonstrable faculty of some people to *see*, literally and not in the mind's eye, images or pictures of what has already been before them physically. This 'eidetic' faculty is wider-spread than most suppose: eidetics

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actually *see*, not *imagine* : some are dull-natured persons, whose visions* are, as it were, mechanical (akin to the green after-images of intently observed red objects) ; others are very lively, identify their visions with themselves, and give play to imagination, so that their visions are partially concepts. The two types are called T and B, since their physical constitutions, if pathological, would be characteristic respectively of tetanus and Basedow's (Graves's) disease. But nearly all examined eidetics have been of mixed type and with no pathological symptoms, i.e. psychophysically normal. It is said that at least a third of all children are eidetic, and that this state is probably in fact normal to youth, but usually disappears with the development of the reason, specially through speech, long before adult life : if retained, it is often at the expense of the rational development, but not always : e.g. Leonardo da Vinci, and a living painter cited by Dr Snijder. But it is one thing to see a vision and another to put a pencil round it, since the very attainment of muscular control tends to expel the eidetic faculty, and even when it survives, the act of drawing usually distorts and elongates the vision. Dr Snijder's account of eidetics and their art, and his pictures, need to be carefully studied, and it will already be clear that the importance of his book goes far beyond what its title suggests.

The eidetic theory has already been applied to palaeolithic cave-drawings, 'memory-pictures' (Wundt), 'physioplasmic—as distinguished from ideoplasmic—art' (Verworn), and 'eidetic visions' (R. R. Schmidt), inspired by *lusus naturae* in the rock. Dr Snijder discusses this very fully, and its relation to the art of living 'primitives' and of persons of sub-normal mentality. *Total* eidetics (rarely found today) do not distinguish between perceptions and conceptions ; and so their drawings—their fixed visions—are extremely exact and as it were, 'snapshots' ; but they lack grasp of structure and power of selection, abstraction and relation, and are individual, not generalized, pictures, uncertain and uneasy isolations ; and the figures tend to be distorted in the drawing, and to 'swim in space'. These characteristics are modified in proportion to the degree of eideticism in the individual.

The Cretans, Dr Snijder maintains, were living, at least down to L.M.I., mainly in the totally eidetic state ; physically (as shown in art representations) they would belong to the B type ; this is not surprising when one considers how much lime there must be in their diet (Crete = 'the chalk island'), for this is a specific against tetanus. Visions of the T type are static, those of the B type move and change : hence the sense of movement in Minoan art. The eidetic sees his world in very bright colours ; but he sometimes, it seems, 'sees blue' in place of the colours of nature (cp. some of the frescoes). And the tendency to draw hybrids occurs in Minoan art (e.g. flowers) and in that of living eidetics.

* I shall use 'vision' to translate *Anschauungsbild*, without, of course, any mystical connotation.

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To go outside painting : Minoan *architecture* lacks lucidity : the parts are not related to the whole. The Cretan would extend his palace indefinitely, without feeling the need for an organized plan ; light-wells and pierced walls gave him vistas, stairways and their traffic appealed to his love of movement. *Sculpture*, known only in its minor forms, shows the same love of movement, instinct for outline, and fondness for detail, and is equally wanting in structural interrelation. Of *language*, we can only judge from what is known or surmised of pre-Greek survivals in Greek (Dr Snijder disclaims expert knowledge) : these include a mass of specialized names (animals, plants, architectural terms, cult-objects, etc.), but the generic words were provided by the Greeks themselves. This pre-Greek speech seems to have been primitive in character, as in the use of distinct words to designate the same thing in different relations (cp. Lévy-Bruhl) : and Dr Snijder infers that the Minoans, so far as this speech was theirs, lacked generic terms—a rash assumption, surely, when we consider the habits of any people entering a strange land full of unfamiliar particulars. Of *writing*, it may seem premature to speculate : yet, if we take the most developed form of the hitherto undeciphered Minoan script, we find perhaps some phonetic signs, but also certainly many ideograms representing definite concrete objects. In *literature*, the Homeric similes distinguished by scholars as ‘early’ seem to provide, in their vivid successions of pictures with each of which the poet identifies his own experience, what we might expect to have come down from an eidetic people. Finally, on *religion* Dr Snijder makes some profoundly interesting remarks : for instance, epiphanies are common in Minoan art—would not eidetics actually ‘see’ the god, and ought we not to take more literally than we do many examples (not only in Crete) of such revelations ?

Dr Snijder very properly discusses the racial elements of which the Minoans were composed : he thinks that Egyptian influence has been exaggerated, but accepts some immigration, of related stocks, from Anatolia, whereby, especially in East Crete, the native art was ‘activated’. But the native foundation remained always paramount, and was, as Karo said, in the deepest sense un-Greek and un-European. Hence we can suppose no immigration from the North. The general affinities—but no more than this—are to be sought in a wide region stretching from Egypt and Mesopotamia to West Europe, and including North Africa. Within this area the same kind of mentality produced Altamira, Knossos, and the related though degenerate art found in North Africa down to Roman times : Malta’s importance is not overlooked, but the Minoans, whatever their origins, lived mainly in isolation, retaining (and developing ?) their eidetic mentality.

The ‘European’ spirit, by contrast, is first seen on the mainland of Greece, where ‘Mycenaean’ culture is rooted in Middle Helladic, i.e. Greek culture,

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and was at first quite unconnected with Crete. Afterwards, though strongly affected by Minoan art, it kept its own characteristics in many ways and developed them : the mainlanders treated the Cretans as the Romans treated the Greeks ; in conquering, they consciously absorbed. Karo's work on the Shaft Graves is reinforced by a penetrating analysis of the differences between Minoan and mainland art. The latter grasps essentials and structure, and is strongly ornamental, i.e. has the power of abstraction—*Gebundenheit*, contrasted with Minoan *Lebendigkeit*. This is seen also in mainland architecture and town-planning; and perhaps the Knossian palace-style vases in fact reflect a mainland influence. But all was not gain, for the ornamental sense, departing more and more from the Cretan lifelike models, led to degeneration until the kindred blood of the Dorians re-invigorated it.

Further chapters deal with the significance of eidetic in Minoan art and with racial theory. Dr Snijder stresses that there is a personal element in the art of an eidetic, especially if he is of the B type : I take this opportunity of recognizing this, since Dr Snijder refers to an article I wrote after hearing him lecture but before his book was published. We must, he urges in Croce's phrase, ' see with the artist's own eye ', and the Minoan artist's eye was that of an eidetic. All Cretans were not necessarily eidetic : and we may have to reckon with the stimulation of drugs ; notice the Minoan tree-cult, associated with ecstasy. This suggestion is developed in relation to modern medical research. But, indeed, without this stimulus (the place of which in the ancient world needs examining) an eidetic would not distinguish sharply between subjective and objective.

Any one review of this brilliant and very fascinating book must be unsatisfactory, because its author has drawn from so many sources, and invited the criticism of experts in so many fields. The archaeologist and general reader will naturally wish to know how far the conclusions of the Marburg school are accepted by psychologists : they may also find the book at times hard reading. But mostly Dr Snijder writes in easy German, and his humour and common sense are delightful. There is some repetition, and a good deal of, I think, special pleading ; but the matter excuses the method.

In conclusion, I apologise for the date of this review, which is due to a succession of causes but will not, I hope, decrease the interest which this inspiring book abundantly deserves to arouse.

W. L. CUTTLE.

THE PRAXITELES MARBLE GROUP IN OLYMPIA. By OSCAR ANTONSSON. *Stockholm, and Cambridge University Press, 1937. pp. 209, with 26 figures and 32 plates. 10s 6d.*

The problem of the Hermes of Olympia was the subject of an article in *ANTIQUITY* (June 1934, pp. 151 f.). It will be recalled that, working on the

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study of technique, Carl Blümel had concluded that this statue was a copy of Roman date, and not an original by Praxiteles. His thesis produced vigorous controversy, the main lines of which I summarized in my article: the question remains controversial. Mr Antonsson wishes to give it an entirely new turn; he holds that the statue is an original by Praxiteles, but was altered, presumably after some chance injury, in Roman Imperial times. It originally represented not Hermes but Pan; he was wearing a panther-skin, and this explains both the chisel-marks on the back, and the presence of the strut, which is all that the alterer left of the panther's head. Traces of the paws are also said to be discernible on the back of the tree-trunk. The identification of the figure with Pan is further supported by the discovery of the traces of a carved ivy-wreath on the head, and of alteration of the ears, which were originally distinctly pointed. Moreover, the nose is of an animal type—'a ram's nozzle'—suited to Pan but not to Hermes; and probably too there were originally horns. The polish of the statue was imparted to it at the time of its rehandling.

Nor is this all: since the identification with Pan enables us to take into account a new set of literary references to works by Praxiteles, we are led to conclude that this statue was originally a figure in a group, of which the other member was a nymph. An attempt is made to reconstruct such a group with the aid of the Girl from Antium, though finality in this respect is not claimed.

The most important parts of this theory depend, of course, upon observations of the surface of the marble of the statue itself. The arguments are lengthy, and—as has already been said of this controversy—'only in the little square room at Olympia can the case be argued out'. The present time is not favourable for visits to Olympia, and I cannot do more than say that some at any rate who have looked at the statue again in the light of this book are not in agreement with its conclusions; and that in certain matters, such as the pointed shape which we are assured the ears originally possessed, I find it impossible to be convinced.

The reconstructed specimen group which Mr Antonsson offers us is, it must be confessed, a most unpleasing affair; hitherto in this controversy it has been Praxiteles's detractors who have been at pains to disparage the Olympia statue; it has been left for one who champions his authorship of it to deal it the most unkindest cut of all.

The array of drawings and photographs of reconstructions is far from convincing, and in particular the method of emphasizing, by inking in on a photograph, the supposed traces of what the author wishes us to see there seems highly dangerous. It is of a piece with his handling of the literary 'evidence': 'goat-footed' in an epigram is only to be taken metaphorically, because our statue has human feet; and *askos* does not mean a wine-skin, but is playfully used of the infant Dionysos: for the latter Mr Antonsson compares a passage in

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Theophrastus's *Characters*, relying on the 8th edition of 'Liddell and Scott': he does not seem to have looked at the context in Theophrastus, and the new (9th) edition of 'Liddell and Scott' hardly supports him. It may be remarked in passing that the epigrams he quotes refer (for what it is worth) to works of *Pentelic* marble (not Parian) and of the marble described by the adjective *lygdinos*, which is used, at any rate by Philostratus, to describe a marble other than Parian. When he comes to coins, he chooses what he likes to suit his purpose, and discards what he has no use for: thus, a coin shows Pan with goat's legs and a beard: but 'apart from these differences, there can be little doubt that Pan of the coins is related to Olympia Pan'. Again, 'the fact that Pan of the coins and Pan of the marble group wear skins of different animals [goat and panther respectively] *makes no difference* (my italics)'. This is his style of criticism—when a poet says a statue is goat-legged, he doesn't mean it literally; when a coin shows a goat's legs, it is a minor difference which we can think away; and a difference in the animal's skin worn (or rather presumed to have once been worn in the case of the statue) is no difference at all.

The same lack of judgment is shown when Mr Antonsson seeks to justify the identification by reference to religious antiquities. 'Is not Pan, the premier god of Arcadia', he asks, 'a much more suitable symbol of his country than Hermes?' It should not need a reference to Farnell's 'Cults' (v. 1) to remind him of the deep attachment of the Arcadians to Hermes; and indeed Farnell (*id.*, 29) actually says that 'we must always bear in mind that the special characteristics of a god depend on those who are his most devoted worshippers. In the case of Hermes, these were the Arcadians, who at an early period were famous athletes, and had much to do with the rise of Olympia into predominance; they may have borne their deity, an athlete like themselves, to the Altis, whence this conception of him may have spread over the Hellenic world'.

I hope I do not do the very painstaking author an injustice when I say that my impression of his book—useful though it will be in any further studies of the problem—is that he has started from certain premises, and tried to make far too much fit into them, whether it be in what he sees in chisel-marks on the statue, or in what he adduces as subsidiary support.

W. L. CUTTLE.

TWO LIVES OF SAINT CUTHBERT: a Life by an Anonymous Monk of Lindisfarne and Bede's Prose Life. Texts, translations, and notes by BERTRAM COLGRAVE. *Cambridge University Press*. 21s.

Cuthbert, bishop of Lindisfarne and later the most powerful of Northumbrian saints, died on 20 March 687, and the two earliest prose lives were put together well within the lifetime of men and women who had known him. The Anonymous Life, written by a monk of Lindisfarne between 699 and 705, was

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completely recast by Bede about 721 ; there are also a number of additions, the most important being Herefrith's account of Cuthbert's last hours. In lucidity and arrangement Bede's was certainly an improvement on the Anonymous Life, though it sometimes fell short in verisimilitude. Thus the account of the eight-year-old Cuthbert and his fellows standing on their heads stark-naked is bowdlerised by Bede, who, again, does not improve on Cuthbert's vision of Hathuwald's fall to death as told in Anon. Incidentally Hathuwald, not Hadwald, is, I think, the normalised form to be adopted in the translation at p. 127 and at p. 265, and Pleggils, rather than Plecgils, at p. 79 ; Pleg- and -gils are sufficiently recorded as elements in Old English personal names.

Mr Colgrave's excellent edition and translation are long overdue. The nineteenth-century editors were too dependent on their seventeenth-century predecessors, who had used a fraction only of the manuscript evidence collated by Mr Colgrave. The collation of seven manuscripts of Anon. and thirty-eight of Bede (distributed among seven different countries) has been an arduous task carried out most successfully. In face of the manuscript evidence the editor might perhaps have boldly emended *Osingadun* and *Tesgeta* to *Ofingadun* and *Tefgeta*; insular *f* was easily misread as *s*. The translation is pleasant, but is 'about half a piece of swine's lard' sufficiently precise for *quasi dimidiam suis adipem* (p. 102) ? And is 'chalice', now specialised in the sense of 'communion vessel', the right rendering of *poculum* (p. 114) ? The *poculum letitie* was surely something like the *liðwæge* which Hygd, queen of the Geatas, bore to Beowulf and his companions on their return from Denmark (*Beowulf* 1980-3).

The notes are full without being overloaded, but a few place-names, Ahse, Bedesfeld, Hruringaham, Kintis and Medilwong, defy identification.

Mr Colgrave pays some attention to the iconography of the saint, briefly mentioning the paintings on the stalls in Carlisle Cathedral and the great window in York Minster given by Cardinal Langley, bishop of Durham. The amount of old stained glass in the saint's own area is pitifully small and no representation survives in Northumberland or Durham, but reference may be made to figures at Methley (West Riding), Wintringham (East Riding), Emneth and Wiggenshall St. Mary Magdalene (Norfolk), Christ Church, Oxford, and Cotherstone (Somerset).

BRUCE DICKINS.

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Editorial Notes

OUR Editorial Notes of a year ago referred to the difficulties which were brought about by the War, but it was resolved to continue publication in 1940. We have completed the year in spite of rather increased difficulties, and again it is necessary to consider our position.



As was fully expected our circulation has decreased to some extent. By the time the March number was published we had lost many subscribers, and during the whole year they numbered 300. Against that a gleam of encouragement was given by the addition of 50 new names. Had it not been for the closure of the greater part of Europe to cultural activity there was a prospect of considerable additions to our circulation on the Continent, but the succession of Countries which became shut against us made that impossible. So far the 'warnings' for 1941 are comparatively few, but from experience we know they will grow. On the whole our position, considering all things, may be described as better than could be hoped, and once more our thanks are expressed to those who have helped to bring this about.



We have been able to publish each number with the usual punctuality, and so far have reduced the year's volume by only 32 pages. We have been fortunate in securing articles, for it has to be

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remembered that nearly all archaeological work in Great Britain is at a standstill, and the Continent a closed door. If there is a real trouble it is that of continuing to obtain suitable articles of real interest. We have in mind various ways by which this possible lack of material may be overcome, and shall try each quarter to produce a readable number, though at present we live somewhat from hand-to-mouth.



The future has been carefully considered and we shall use every endeavour to keep **ANTIQUITY** in existence, provided the support at present given by our subscribers and contributors is continued. The cost of production has increased; the subscription charged has not, nor do we intend that it shall be so long as both ends can be met. Should it mean eventually that our illustrations cannot be so numerous, and our pages must be somewhat fewer, we hope it will be accepted as a purely War-time measure. If we survive the War the endeavour will have been worth while, and we shall then look forward to **ANTIQUITY** giving its full measure once more without further hindrance, and with energies unimpaired in order to take part in the revival of interest in Archaeology which we have every reason to expect.



In order to attain these hopes we shall need the continued help of all our subscribers. We realize the effect of the burden of taxation imposed on every pocket, but trust that all who have the interests of Archaeology at heart will make the effort to keep **ANTIQUITY** on their list of indispensable needs. Here, may we say, that early payment of the subscription is worth more than it may seem. Correspondence and postage are saved, and it enables us to know where we stand. In this direction we ask everyone so disposed to use the Bank Order which is part of the usual form enclosed with the present number (except for those who already instruct their bank and those who may have paid in advance). This method is a real convenience to all concerned and its adoption now will reduce a good deal of clerical work which is otherwise involved.

The Significance of the Pentatonic Scale in Scottish Song

by E. CECIL CURWEN

THE remarkable way in which the Hebrides have formed a cultural backwater was emphasized by the writer in a recent paper in *ANTIQUITY*,¹ and it was there shown that in those islands the general manner of life of the Early Iron Age has survived almost to our own times. Further evidence of survivals might have been adduced from Hebridean folk-song, and it is one aspect of this that forms the subject of the present paper.

It has long been recognized that one of the salient peculiarities of Scottish song is the fact that a large proportion of the melodies are constructed on the pentatonic scale, i.e. a scale that has only five notes to the octave instead of the seven provided by the white notes of the piano keyboard. This feature was thought to be unique in Europe, and to be shared only by some of the more remote peoples of other continents. If this were a fact, it would be a very remarkable one, and one which would demand an explanation; and as it seemed at least possible that the phenomenon might have archaeological significance, the present study was undertaken.

DEFINITIONS

First it will be desirable to define and explain some of the terms used.

(1) A *pentatonic* scale is one which consists of five notes, the sixth completing the octave. These, if played on the white notes of the piano, correspond to any of the following:—C D E—G A—C; C D—F G A—C; or D E—G A B—D; or they may be taken as corresponding to all the black notes of the piano keyboard. Essentially the scale consists of a group of three notes, each separated by a tone, and another group of two notes separated by a tone; each group being separated from the other by intervals consisting of a tone and a half. It is these two larger intervals which are sometimes spoken of as 'gaps', and it is the filling of these gaps which leads to our ordinary seven-note scale. On the white notes the gaps correspond to the omission of F and B, or E and B, or F and C, and if these notes (or the corresponding notes in other keys) are consistently avoided in a melody, that melody is pentatonic. The rough and ready test for a pentatonic melody is to see

¹ *ANTIQUITY*, 1938, XII, 261–289.

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whether it can be played entirely on the black notes of the piano ; this does not, of course, apply to its harmonization, if any. Well known examples of Scottish pentatonic melodies include those of 'Auld Lang Syne', 'Ye Banks and Braes', the 'Skye Boat-Song', 'The Campbells are Coming', and the psalm-tune 'Kilmarnock'. Tunes classified as pentatonic may be (1) absolute, in which the gaps are strictly maintained throughout ; or (2) virtual, in which one or both of the gaps may occasionally be filled by unessential or passing notes without affecting the essentially pentatonic structure of the melody.²

(2) A *heptatonic* scale is one consisting of seven notes, the eighth completing the octave ; in the present study this term will be confined to the diatonic scale, i.e. that which corresponds to the white notes of the piano key-board. (The term 'heptatonic' could theoretically be applied to any seven-note scale having different intervals from those of the diatonic).

(3) A *hexatonic* scale is intermediate between pentatonic and heptatonic, and, as the name implies, consists of six notes, the seventh completing the octave. It is as if one of the two 'gaps' in the pentatonic scale had been filled in, the remaining gap corresponding to the omission of either F or B, or less commonly E or C.

The terms sub-pentatonic, sub-hexatonic, etc. may conveniently be used in connexion with melodies which, while conforming to the pentatonic or hexatonic scales, make use of fewer than the five, or the six, notes per octave, respectively.

Pentatonic and hexatonic scales are sometimes called 'gapped' or 'transilient' because they 'leap over' the omitted notes.

THE DISTRIBUTION OF PENTATONIC SCALES

The first step in investigating this problem is to find out the extent to which Scottish songs are actually pentatonic, and then to compare these results with comparable material from neighbouring countries. To this end I have examined over 5700 folk-melodies, mostly from northern and western Europe, but also from other parts of the world. The difficulty has been to obtain large enough collections of folk melodies that have not been 'improved' by modern musicians ; in

² For pentatonic scales see Carl Engel, *The Music of the Most Ancient Nations* (1864, reprint 1929), chap. IV ; A. H. Fox Strangways, *The Music of Hindustan* (1914) ; Hjalmar Thuren, *Folkesangen paa Færøerne* (Copenhagen, 1908), 193-225 ; M. Kennedy-Fraser, *The Songs of the Hebrides*, I, xxviii-xxxiii ; *Journ. Folk Song Soc.* (London), IV, no. 16 (1911), 150-3 ; also articles in musical dictionaries.

THE PENTATONIC SCALE IN SCOTTISH SONG

some cases I have had to be content with very small collections, sufficient to give one an impression of their tonal habits, but not enough to give reliable percentages. These results, supplemented by the statements of other investigators, provide material for a highly significant distribution-map. As far as possible the prevalence of hexatonic scales has been taken into account at the same time.

Four collections of Scottish songs were examined, two from the Hebrides, one general Gaelic collection, and one collection of Lowland songs. The tunes of this last are partly of Highland origin, partly, perhaps, from elsewhere in the British Isles, and partly based on bag-pipe airs. In this connexion it should be remembered that the 'pipes' are of comparatively recent introduction—some four or five centuries only—and that their scale is heptatonic, with intervals which are not strictly diatonic, but resemble those of one of the Arabic scales.

Of 241 melodies in Mrs Kennedy-Fraser's *Songs of the Hebrides* (3 volumes, including melodies quoted in the Introductions), 46 per cent. are pentatonic, and a further 33 per cent. are hexatonic (i.e. 6-note scale). Of the pentatonics in this collection 18 per cent. have a compass not exceeding five notes—a feature which connotes antiquity.³ Most of these songs have been collected in the islands of the Outer Hebrides and in Eigg. Miss Frances Tolmie's collection comes mainly from Skye,⁴ and here, out of 110 melodies, we find 38 per cent. pentatonic and 50 per cent. hexatonic, 14 per cent. of the pentatonics having a restricted compass. Taking a general collection of 120 Gaelic songs, not exclusively from the islands,⁵ we find 41 per cent. pentatonic, and 37 per cent. hexatonic, while of the pentatonics only 4 per cent. are of restricted compass. Finally, out of 336 Scottish songs with English words⁶ we find that 31 per cent. are pentatonic, and 33 per cent. hexatonic; none of these pentatonics have a compass restricted to five notes.

Thus we have evidence of a strong and active pentatonic tradition in Scotland, extending from the Hebrides to the Lowlands, differentiated chiefly by the progressive diminution in the proportion of restricted-compass melodies from 18 per cent. in the Outer Hebrides to *nil* in the Lowlands. From this we may infer that the extreme conservatism of the islanders has preserved the most ancient melodies. It must be emphasized in this connexion that a given melody is not necessarily

³ Fox Strangways, *op. cit.*, 48, 123.

⁴ *Journ. Folk Song Soc.* (London), IV, no. 16 (1911), 143-278.

⁵ *A' Choisir Chiuil* (Bayley & Ferguson, Glasgow).

⁶ *Songs of Scotland* (Boosey & Co.), 2 vols.

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ancient because it is pentatonic. Out of fifteen entirely modern tunes composed by Mr Duncan Johnston, no fewer than nine are pentatonic and three hexatonic, while none of the former has restricted compass.⁷ In private correspondence Mr Johnston tells me that in composing these tunes he had no thought of scales in his mind. He tells me: 'The words are composed first, and while being crooned over and over, the tune gradually adjusts itself to the measure of the words. . . . These tunes of mine came as naturally as like tunes came to my ancestors of centuries ago'. This illustrates the fact that the Scottish tendency to pentatonicity is a form of musical tradition which is intensely conservative.⁸

We must now turn to the folk-melodies of neighbouring countries for comparative material.

In four collections of Irish songs the pentatonic melodies vary from 10 to 20 per cent. and the hexatonic from 27 to 47 per cent. The *Complete Petrie Collection of Ancient Irish Music*⁹ is probably the most representative, and in this Collection of over 1500 melodies the pentatonics are about 13.5 per cent. and the hexatonics 34 per cent. The Irish have such a gay and irresponsible way of embroidering their tunes with grace-notes that the difficulties of scale-analysis are considerably increased, and some discrimination is needed to distinguish melodies which are essentially pentatonic in spite of profuse ornamentation. On the whole it is probable that the percentage of pentatonics has been underestimated rather than the reverse. Only about $4\frac{1}{2}$ per cent. of these have a compass restricted to five notes.¹⁰

⁷ Duncan Johnston, *Cronan nan Tonn* (Glasgow, 1938).

⁸ The same tendency is very evident in the compositions of John Macdonald of Oban (seven pentatonics among nine tunes examined).

⁹ Edited by C. V. Stanford; Boosey & Co., 1902-5.

¹⁰ Among Moore's *Irish Melodies* the following are virtually pentatonic: 'Erin, O Erin' (except third quarter); 'Though dark are our sorrows' (except third quarter); 'Oft in the stilly night'; 'This life is all chequer'd'; 'As vanquished Erin'; and 'I'd mourn the hopes that leave me'. Many Irish tunes have the melody-formula AABA, where A is the original theme, and B is a related, but different, piece of melody, incomplete in itself, inserted in order to break the monotony of the frequent repetition of A. That B may be much later than A is suggested by the observation that in several tunes in which A is pentatonic, B may be hexatonic, heptatonic, or even chromatic. Similarly, in Scottish tunes a very common formula is ABABA . . . etc., appearing as alternating refrain (A) and verse (B). Here again it is common to find that B is constructed on a more developed scale (e.g. hexatonic or heptatonic) than A (e.g. pentatonic). The recent addition of B to an older A is a known fact in a few instances, e.g. by John Macdonald in *Orain Caraid* (Glasgow, 1938), p. 4; and by Archibald Ferguson in *A' Choisir Chiuil*, p. 67.

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Turning to Wales we find that of 312 folk-melodies preserved in the first two volumes of the *Journal of the Welsh Folk-Song Society* (1909-1925), the pentatonics amount to no more than 1 per cent., while the hexatonics are 32 per cent. In this case the heptatonics (or 7-note scales) are in the majority (67 per cent.). None of the pentatonics have restricted compass.

As for England, the 169 melodies in the first volume of the *Journal of the Folk Song Society* (1899-1904) show pentatonics 4 per cent., and hexatonics, 20 per cent. Here again, none of the former have restricted compass. Of local English collections we have the following figures : of 38 songs mostly from southeastern England,¹¹ three (from Sussex) are pentatonic, and 18 are hexatonic ; of 27 from Somerset,¹² two are pentatonic, and three are hexatonic ; finally, of 91 songs from northern England,¹³ 6.6 per cent. are pentatonic, and 25 per cent. hexatonic. (Percentages are not given in the case of smaller collections because they may be misleading).

Before passing on to the Continental material we may sum up the British evidence by saying that the pentatonic tradition is very strong in Scotland, fairly strong in Ireland, and weak in Wales and England ; the hexatonic, on the other hand, is almost as strong in England and Wales as in Scotland and Ireland.

Some of the Continental material can most conveniently be shown in tabular form (percentages given in brackets, but only when the number of melodies in a group exceeds 49).

District	Melodies Examined	SCALES			
		Pent.	Hex.	Hept.	Etc.
Brittany (Ducoudray) ¹⁴ ..	30	1	9	20	—
Brittany (Graves) ¹⁵ ..	30	1	8	20	1
France (Tiersot) ¹⁶ ..	60	3 (5%)	24 (40%)	33	—
Basques (Gallop) ¹⁷ ..	48	2	12	32	2

¹¹ Lucy Broadwood, *English Traditional Songs and Carols*.

¹² Cecil Sharp and C. L. Marson, *Folk Songs from Somerset*.

¹³ J. Stokoe and S. Reay, *Songs and Ballads of Northern England*.

¹⁴ L. A. Bourgault-Ducoudray, *Trente Mélodies populaires de Basse-Bretagne* (Paris, 1885).

¹⁵ A. P. Graves, *The Celtic Song-Book* (1928).

¹⁶ Julien Tiersot, *Sixty Folksongs of France* (Boston, U.S.A., 1915).

¹⁷ R. Gallop, *Vingt-Cinq Chansons populaires d'Eskual Herria* (Bayonne, 1928) ; *A Book of the Basques* (1930), chap. VIII.

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This group, covering western Europe between Britain and Spain, shows itself weak in pentatonics, but still strong in hexatonics.

When we turn to northern Europe we get the following results :

District	Melodies Examined	SCALES			
		Pent.	Hex.	Hept.	Etc.
Lapland (<i>Juoigos</i>) ¹⁸	848	(67%)	(30%)	(2%)	(1%)
Finland (secular songs) ¹⁹	100	(9%)	(25%)	(66%)	—
Finland (religious songs) ¹⁹	112	0	(34%)	(66%)	—
Iceland ²⁰	20	1	4	15	—
Faroe Islands ²¹	100	(8%)	(54%)	(38%)	—
Norway ²²	100	(4%)	(50%)	(46%)	—
Sweden ²³	50	0	(46%)	(54%)	—
Denmark ²⁴	32	0	7	25	—
Esthonia, Latvia and Lithuania ²⁵	15	1	5	8	1
Russia ²⁶	100	(2%)	(50%)	(48%)	—
Germany ²⁷	100	(2%)	(15%)	(80%)	(2%)

In addition to these Thuren states that pentatonic forms are found in the songs of two half-civilized Finno-Ugrian stocks in northeast Russia—the Tscheremiss and Wotjaks.²⁸

In this northern group we note a heavy concentration of pentatonics in the extreme north (Lapland), fringed by a moderately strong pentatonic tradition in Finland, the Faroe Islands, and perhaps in northeast

¹⁸ Armas Launis, *Lappische Juoigos-Melodien* (Mém. de la Soc. Finno-Ougrienne, xxvi, Helsingfors, 1908). I am indebted to Mrs Gudmund Hatt of Copenhagen for this reference, and for the loan of her own copy.

¹⁹ *Suomen Kansan Sävelmiä*, vols. I and II

²⁰ Sv. Sveinbjörnsson, *Icelandic Folk-songs* (Edinburgh, R. W. Pentland).

²¹ Hjalmar Thuren, *Folkesangen paa Færøerne* (Copenhagen, 1908).

²² O. M. Sandvik, *Folke-musik i Gudbrandsdalen* (Christiania, 1892).

²³ Assar and Olsson, *Sverges Melodibok*, I (Stockholm).

²⁴ *Danmarks Melodibog* (Copenhagen).

²⁵ *The Botsford Collection of Folk-Songs* (New York, 1938), II.

²⁶ N. Rimsky-Korsakov, *A Hundred Russian Folk Songs* (St. Petersburg, 1877), collected between 1810 and 1820, mainly from the Governments of Novgorod and Orlov.

²⁷ A. Härtel, *Deutsches Liederlexikon* (Leipzig).

²⁸ Hj. Thuren, *op. cit.*, 202.

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Russia. Further south the pentatonics are weak or absent, but throughout the whole group the hexatonics are numerous, with the possible exception of Germany.

Fewer melodies have been examined for southern Europe and adjacent lands, but sufficient has been done to show the general trend.

District	Melodies Examined	SCALES			
		Pent.	Hex.	Hept.	Etc.
Spain and Portugal ²⁹ ..	16	0	1	14	1
Italy and Sicily ²⁹ ..	19	0	3	14	2
Greece ³⁰ ..	94	(2%)	(32%)	(55%)	(11%)
The Balkans ²⁹ ..	43	1	11	26	5
Austria, Hungary, and Czechoslovakia ²⁹ ..	30	0	5	23	2
Hungary ³¹ ..	94	0	(7%)	(69%)	(23%)
Poland ²⁹ ..	16	0	2	14	0

Pentatonics in this south and southeastern area, which amount to no more than one per cent. of the whole group, seem to be confined to Greece and the Balkans. Hexatonics are numerous in the same area, but weak elsewhere.

Outside of Europe the Arabs have a highly developed heptatonic system in which pentatonic scales have little or no place.³² The same may be said of the Hindustani system, except that in this case an earlier pentatonic system co-exists.³³ In India pentatonic scales are specially common in the Himalayas and in Bengal,³³ as well as among the hill-villages, and they seem to be particularly associated with the pre-Aryan population. Persian music is said to resemble the Hindoo (heptatonic), and we thus begin to suspect a possible correlation between heptatonic scales and Indo-European languages.

Elsewhere in Asia pentatonic scales are common, if not predominant almost everywhere—in Mongolia, China, Japan, Siam, Annam, Java,

²⁹ *The Botsford Collection of Folk-Songs.*

³⁰ *Botsford Collection*, and L. A. Bourgault-Ducoudray, *Trente Mélodies populaires de Grèce et d'Orient* (Paris, 1897); songs common to both collections counted once only.

³¹ Béla Szilasi, *Hungarian Folk-Songs* (Budapest, 1935).

³² F. Salvador-Daniel, *The Music and Musical Instruments of the Arab.*

³³ A. H. Fox Strangways, *The Music of Hindustan* (Oxford, 1914).

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Sumatra, the South Sea Islands,³⁴ and New Guinea.³⁵ In China they exist side by side with a very ancient heptatonic system, to which reference will be made later.

In Africa five-note scales have been reported from the Sudan and from Zululand,³⁴ as well as from Nubia, Abyssinia,³⁶ Basutoland, and South Africa generally.³⁷

In North America pentatonics are common among the Indians, Eskimos and Negroes. I have obtained the following figures from collections of songs :—

People	Melodies Examined	SCALES			
		Pent.	Hex.	Hept.	Etc.
N. American Indian ³⁸ ..	9	7	0	1	1
Eskimo—ancient ³⁹ ...	32	18	12	1	1
Eskimo—1750-1900 ³⁹ ..	19	1	7	10	1
Eskimo—modern ³⁹ ..	14	1	2	7	4
Negro (Jubilee Singers) ⁴⁰	61	(49%)	(38%)	(13%)	—
Negro Slave Songs ⁴¹ ..	148	(36%)	(24%)	(36%)	(4%)
U.S.A. (all classes of population) ⁴²	32	15	12	4	1

As a contrast, Spanish influence in Mexico and Latin America tends to eliminate transilient scales altogether, but pentatonics re-appear among the South American Indians.

³⁴ Hj. Thuren, *op. cit.*, 193-203.

³⁵ Cecil Sharp, *English Folk-Song : Some Conclusions*, 45.

³⁶ Carl Engel, *The Music of the Most Ancient Nations*, 157-162.

³⁷ *Oxford Companion to Music* (1938), s.v. 'Harmony', §4, and 'Scales', §10.

³⁸ Thurlow Lieurance, *Indian Songs* (Chappell & Co., 1913)

³⁹ W. Thalbitzer, *Inuit Sange og Danse* (Copenhagen, 1939). I am indebted to the author for a copy of this work.

⁴⁰ Rev. G. D. Pike, *Jubilee Singers* (London, 1873). A characteristic example is 'Swing low, sweet chariot'.

⁴¹ W. F. Allen, etc., *Slave Songs of the United States* (New York, 1867).

⁴² *Botsford Collection of Folk-songs*, 1. This mixed group includes Negro, Indian, Creole, Kentucky, Texas, Middle-West, Cowboy, and a chantey. See also *Oxford Companion to Music*, s.v. 'United States', §§6, 7.

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THE SIGNIFICANCE OF THE DISTRIBUTION

Though it is impossible at the present time to make a complete statistical survey of folk-song scales of the whole world, yet the foregoing data are enough to give a fairly clear and consistent picture which is highly significant. Broadly speaking, we see the areas covered by Indo-European and Arabic languages as an island of heptatonic scales in an ocean of pentatonic. In Europe the few surviving pentatonic areas are on the extreme fringes of the north and northwest, including Lapland, Scotland and Ireland. It seems clear from this that the heptatonic scales have spread over this area at the expense of an earlier pentatonic system, and we may reasonably seek a single centre from which diffusion has taken place.

Now the factor that is common to all the pentatonic areas is neither racial nor linguistic but acoustic and musical. It is generally recognized that the five-note scales are earlier and more primitive than the six or seven-note scales. The form of the pentatonic scale is determined by the principles of quintal harmony, which are universal, and not subject to local usage, and the 'gaps' exist because in a purely pentatonic stage of development the ear has not yet learned to distinguish or appreciate the semitone which inevitably appears when the 'gaps' are filled in.⁴³ Missionaries, for instance, have reported that primitive peoples, accustomed only to pentatonic singing, are unable to sing European hymn-tunes.

The point to be emphasized in the present connexion is that the pentatonic is essentially a vocal rather than an instrumental scale. This is well illustrated by the Lapp *Juoigos* melodies, two-thirds of which are pentatonic or sub-pentatonic. A Lapp tends his reindeer on the tundras, and with wide views of lakes and mountains before him he thinks of a good friend or schemes evil against an enemy. His thoughts form into words and sounds, and so a short melody takes shape, accompanied by words consisting chiefly of names and ejaculations. In a similar way he may express his satisfaction with his beautiful herd or with the remembrance of a place or past event. In the loneliness of the tundras he repeats the tune again and again, adding, perhaps, a few descriptive words, until he has produced something which satisfies him. Subsequently he may sing his melodies in company, and the best of them, or those of which the object is generally well-known, may pass into general currency.⁴⁴

⁴³ A. H. Fox Strangways, *op. cit.*, 123.

⁴⁴ Armas Launis, *op. cit.*, Introduction.

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The heptatonic (seven-note), on the other hand, is an instrumental scale, associated with such musical instruments as are provided with a fixed scale of notes, such as the harp, lyre or flute. The spread of the heptatonic at the expense of the pentatonic is, therefore, a measure of the spread of such musical instruments. In recent centuries the heptatonic has also proved to be an harmonic scale, whence nearly all modern art-music, which has harmony as its basis, is either heptatonic or chromatic.

The hexatonic (six-note) scale is intermediate between these extremes. Like the pentatonic, it is melodic rather than harmonic, and it is also primarily vocal, but it is the product of people who have already become familiar with the seven-note scales of the musical instruments and their semitonal implications.

Melodies constructed on the pentatonic scale are characterized by strength and sweetness, and seem most fitted to express the strong emotions of simple folk. More sophisticated emotions demand chromatic scales. But to those of us who still like to remain simple, pentatonic melodies go right to the heart, and, to borrow Mr Fox Strangways' words, 'move us like forlorn hopes and lost joys, like the places we knew when we were children . . . they appeal by their freshness and strangeness, but still more by their intimate familiarity'.⁴⁵ This is not a mere digression into sentimentality, but an attempt to explain the persistence of the pentatonic tradition in certain areas in spite of the introduction of musical instruments having more advanced scales. This persistence will, no doubt, in its turn explain the appearance in pentatonic areas of instruments such as flutes and resonators which are tuned pentatonically rather than heptatonically⁴⁶—in apparent contradiction to the generalization already put forward.

We have said that the spread of the heptatonic scales at the expense of the pentatonic is a measure of the spread of musical instruments such as the harp, lyre or flute, and that the heptatonic distribution corresponds roughly with the spread of the Indo-European and Arabic languages. We must now look, therefore, for the earliest origins of musical instruments having fixed scales.

⁴⁵ A. H. Fox Strangways, *op. cit.*, 3. It is only fair to say that the words quoted referred originally to a polyphony of the Middle Ages.

⁴⁶ C. K. Wead, 'Contribution to the History of Musical Scales', *Report of the Smithsonian Institution* (for year ending June 30, 1900), 431-2, and pl. 2, figs. 3 and 4.

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THE ORIGIN OF THE HEPTATONIC SCALE

Canon Galpin has fortunately provided us with the most up-to-date review of the available evidence on this subject.⁴⁷ He has shown that instruments possessing fixed scales, such as the harp, lyre and flute, can be traced back to their most primitive forms in an early phase of the rise of material civilization in western Asia and Egypt. The bow-shaped harp appears in the Jemdet Nasr period at the close of the fourth millennium B.C., and, like the lyre and flute, is considered to be of Asiatic origin. At any rate the flute found its way at a very early date to India and China, apparently carrying with it its Sumerian name and scale. Reed-blown pipes, both single and double, appear in Egypt at the very dawn of history.

The Sumerian flute, called *ti-gi* or *imin-e* was carried as far as China, and the Chinese records tell us that in the third millennium B.C. the Imperial Master of Music was sent westwards 'to study its proper ordering'. In due course he found a people in western Asia whose musical scale he adopted, and he cut his bamboo tubes to accord with the notes he had heard. On his return the scientists proceeded to develop the mathematical theory of this western scale, which was definitely heptatonic.

This account illustrates remarkably well the point we have just been making, that the seven-note is an instrumental scale, and that it is introduced with the instrument wherever the latter is adopted by pentatonic people. The reaction of conservative pentatonic tradition is also well illustrated in the case of China, for in spite of the possession of this ancient heptatonic system it was found necessary to re-establish the pentatonic scale by Imperial edict in the 15th century A.D., owing to the difficulty experienced by Chinese musicians in expressing the semitones of the seven-note scale.

Canon Galpin has been able to calculate the scale of a specimen of the Chinese vertical bronze flute, called *ti*, dating from before the twelfth century B.C., and he found that it was heptatonic, corresponding to the so-called Lydian mode, i.e. the scale of F to F on the white notes of the piano, with B natural (not flat).

The second name of the Sumerian flute, *imin-e*, means 'seven voices', which not only indicates the scale, but also perhaps draws attention to it as a novelty. The scales of two Egyptian flutes from Beni Hasan (about 2000 B.C.) and of two reed pipes from Ur (2800 B.C.),

⁴⁷ Canon F. W. Galpin, *The Music of the Sumerians* (Cambridge, 1937).

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have also been shown by Canon Galpin to correspond to the heptatonic Lydian mode. This mode, which is rare in Europe, is also found in some of the oldest vocal traditions of the Jewish Synagogue, said to have been handed down from the days of Ezra (fifth century B.C.). It is also a fundamental part of Hindoo music, and is found on the southeast coast of Arabia, as well as among the Bantu tribes of Africa.

It therefore appears that the heptatonic scale, and the musical instruments associated with it, may be added to the list of the arts of material civilization which appeared with such remarkable rapidity in the fertile river-valleys of western Asia after the stabilization of society consequent upon the 'discovery' of agriculture. These arts, which include the cultivation of corn, the domestication of animals, the making of pottery, the working of certain metals, the building of cities, and the art of writing, diffused at very different rates into surrounding lands. The first to reach Britain were agriculture, cattle-rearing and pottery, and their introduction, as is now well realized, marks the beginning of our Neolithic period, probably somewhere during the third millennium B.C. Copper, bronze and gold followed some centuries later, but writing lagged behind for over two thousand years. If, now, we may add to this list the heptatonic scale and the harp or flute, we have to consider at what period in our prehistory these are likely to have first reached our shores.

If the arguments so far adduced are correct, the pentatonic fringe in Scotland and Ireland must represent a conservative musical tradition that has to some extent resisted absorption by the incoming heptatonic. Now the two epochs at which the introduction of the latter could most likely have taken place are the Neolithic period and the coming of the Celts in the Late Bronze and Early Iron Ages.

THE SIGNIFICANCE FOR THE BRITISH ISLES

Neolithic civilization reached Britain along two main approaches : (1) Neolithic A, characterized by 'causewayed' camps, arrived over-land from the southeast, probably crossing the Channel near its narrowest part ;⁴⁸ (2) the Megalithic culture spread coastwise along the Atlantic shores of Europe, along the sea-route that led from the Mediterranean by Gibraltar, the Spanish coast, Brittany, Cornwall, both shores of the Irish Sea, the western Highlands, the Hebrides and the Orkneys

⁴⁸ Neolithic B is not considered here, as it may have been merely a local reaction on the part of our mesolithic aborigines, as Mr Stuart Piggott has suggested.

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to Scandinavia. The standards of culture that reached the British Isles by these two approaches seem to have been so far similar that it is unlikely that musical instruments, however rudimentary, would have been introduced by one route and not by the other. Now the Atlantic sea-route was of great importance at this time, and must have given rise to a somewhat homogeneous culture-group on both sides of the Irish Sea, composed of a fusion of mesolithic aborigines with megalithic traders. Although the importance of this trade-route waned during the Bronze Age, it never fell entirely into disuse, and even today it is used by the coastwise Breton onion-trade. Meanwhile the continued homogeneity of the descendants of this megalithic culture-pool is suggested by a series of distribution-maps compiled by Miss Lily F. Chitty and published by Sir Cyril Fox.⁴⁹ These show the distributions of (1) flat and hammer-flanged bronze axes; (2) Early Bronze Age food-vessels; (3) Late Bronze Age encrusted and (4) cordoned urns. The first covers almost the whole of the British Isles with the same types of axe at the beginning of the Bronze Age. The food-vessels, which come slightly later, cover mainly, but not exclusively, Ireland and the 'Highland Zone' of Britain. In the Late Bronze Age the area covered by the encrusted and cordoned urns is rather more restricted, and covers little more than Scotland, Ireland, parts of northern England and western Wales. In all the maps there is a suggestion that the main trade-route may have diverged overland across the Clyde-Forth isthmus to reach the North Sea from the Irish Sea, and there are strong concentrations of dots in the northeast of Ireland.

Down to the Late Bronze Age therefore, we have reason to suppose that Scotland, Ireland, and part of Wales were occupied by a more or less homogeneous culture-group that was in the main descended from the old megalithic stock. At about this point the Celtic immigrations begin to affect both Britain and Ireland. So far as we can tell, the lowland zone of Britain was colonized by *p*-Celts⁵⁰ (or 'Brythons') from across the Channel, while Ireland was settled by *q*-Celts (or 'Goidels') who, according to one view, arrived by the old Atlantic

⁴⁹ *The Personality of Britain* (3rd edn., Cardiff, 1938), p. 40, and pls. II, V, VI, and VII.

⁵⁰ This refers to the linguistic division of the Celtic-speaking peoples into *p* and *q* branches, the former comprising at the present day the Welsh, Cornish and Breton stocks, and the latter the Gaelic-speaking Irish and Scottish. Where the former group uses a *p*, as in *map* (=son), the latter tends to use a *q* or *c*, as in *mac* (=son). Similar *p* and *q* variations existed between Greek and Latin, and between the dialects of ancient Italy (Latin and Oscan) and Greece (Attic and Ionic); also between Zend and Sanskrit.

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sea-route from Spain.⁵¹ It was not till about the fifth century A.D. that the Celts of Ireland, known as Scotti, overflowed into the western Highlands of Scotland. According to ancient Gaelic sources the pre-Celtic aborigines of both areas—Ireland and Scotland—were known as Cruithin, a term which is philologically equivalent to Pretani, by which name they were known to the *p*-Celts and ultimately to the Greeks. This, probably through confusion with the Britanni of northern Gaul, gave rise to the name of Britain.⁵² The Cruithin correspond, in the view of Prof. MacNeil, to the ethnic group known as the Picts, and in Ireland their heaviest concentration was in the north-east.

We thus have three factors common to the areas in question : (1) a more or less homogeneous pre-Celtic culture-group ; (2) a pre-Celtic population known as the Cruithin, or Picts ; and (3) a pentatonic musical tradition which is strongest in those parts which were the latest to come under Celtic influence, viz. Scotland, and virtually absent among the *p*-Celtic people of Wales. It is difficult to resist the conclusion that the pentatonic tradition is a legacy from the pre-Celtic Picts, and that the latter, whatever their language may have been in historic times,⁵³ represented the old megalithic stock blended, no doubt, with Beaker or other Bronze Age elements.

Now a distinctive musical tradition is the language in which the soul or ' personality ' of a people finds expression, and it can exert as great a unifying and definitive influence on an ethnic group as can ordinary language. The modern Highlander, who is sprung from Pict, Gael and Norseman, is therefore at heart a Pict, whether he speak Gaelic or English. The strong pentatonic tradition of the Picts has to a large extent resisted absorption by the musical tradition of the Celts, just as the Celtic language has displaced those of the Picts and Norsemen, while absorbing certain elements from them.⁵⁴ In the same way the strange, superstitious mysticism of the Hebrides, so commonly attributed to the ' Celts ', seems much more likely to have come down from the

⁵¹ The support given to this view by Irish tradition is worth consideration.

⁵² Eoin MacNeill, ' The Pretanic Background in Britain and Ireland ', *Journ. R. Soc. Ant. Ireland*, LXIII, 1-28.

⁵³ J. Fraser, ' The Question of the Picts ', *Scottish Gaelic Studies*, II, pt. II (1928), 172-201.

⁵⁴ ' The Gaelic vocabulary, both in Ireland and in Scotland, contains a very large pre-Celtic element '.—J. Fraser, *op. cit.*, 185.

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ancient megalithic culture which was remarkable for elaborate ritual connected with death and burial.

As far, then, as the British Isles are concerned, the significance of the Scottish pentatonic lies in the indications it gives that musical instruments possessing a scale of notes, such as the harp, or crot,⁵⁵ together with the seven-note scale, were most probably first introduced by the Celtic immigrants of the Late Bronze and Early Iron Ages ; further, that the survival of the pentatonic tradition in the north bears testimony to the vitality and continued entity of the pre-Celtic and pre-heptatonic Pictish element in the modern population of Scotland, and to a less extent in that of Ireland.

THE HEPTATONIC IN EUROPE

The arts which arose in the Near East at the dawn of civilization were taken over by Europe, one by one, and developed in a highly original way. The Sumerian heptatonic scale was not adopted slavishly. Greek music, the earliest European music of which we have detailed knowledge, had adopted the seven-note scale and developed from it a series of modes upon which early Christian and medieval Church music is said to have been based. But the character of Greek music as we have it depicted by contemporary writers a few centuries before Christ may well represent that of a considerable part of Europe at, or even before, that time. The Greeks reduced to a system what was then current practice, and we have details, not only of diatonic progression and modes, but also of enharmonic and transilient scales. It is difficult to be sure whether they recognized the true pentatonic scale. The diatonic modes are found among the folk-melodies of the greater part of Europe today, including all parts of the British Isles, and one may therefore infer that they were characteristic of the music of the early Celtic immigrants.

SUMMARY OF CONCLUSIONS

The arguments adduced in this paper may now be summarized :—

1. Musical instruments possessing fixed scales of seven notes to the octave appear for the first time at, or soon after, the dawn of material

⁵⁵ The Celtic instrument may have been the bow-shaped harp (Gk. *νάβλα*, Heb. *nebel*), or the crot or *cruit* (Gk. *κιθάρα*), a form of lyre. The triangular form of harp popularly associated with the Welsh and Irish is of northeast European origin, and was introduced to the British Isles by the Vikings ; see F. W. Galpin, *A Textbook of European Musical Instruments* (1937), 79, 83.

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civilization in the Near East.⁵⁶ An early partial diffusion took place into Asia as far as China, without permanently affecting the indigenous pentatonic (vocal) scales. A later and much more effective diffusion occurred, probably along with the Indo-European languages, into Iran and Hindustan, and also into Europe, resulting in the displacement of pentatonic by heptatonic scales everywhere in Europe, except in the far north and northwest, viz. Lapland, Scotland and, to a less extent, Ireland, Finland and the Faroe Islands.

2. The introduction of these musical instruments and their associated heptatonic scales into the British Isles was probably effected by the Celtic immigrants of the Late Bronze and Early Iron Ages⁵⁷, while the survival of a pentatonic musical tradition in Scotland, and to a less extent in Ireland, indicates the persistence of a conservative pre-Celtic element in the population, corresponding to the historical Picts, and ultimately derived from the megalithic culture. Nothing could better illustrate Fox's insistence on the continuity of culture in the 'highland zone', its conservatism, and its tendency to absorb and modify immigrant cultural elements, while remaining at heart ever the same.

NOTE.—In speaking of the Scottish Picts as 'pre-Celtic' I have used that term in relation to the Dalriadic Settlement of Argyll; it does not exclude the possibility of some previous admixture with *p*-Celtic stock from Southern Scotland, nor the probability of *q*-Celtic admixture derived from Irish traders. The fact that the Orkneys bore a *q*-Celtic name (Orcades) in the second century A.D. (Ptolemy) may point to the regular use of the north-western sea-route by the Irish Celts long before they finally settled in Argyll.

⁵⁶ It is significant that among the city-dwelling descendants of Cain, the first cultivator of the ground, are not only the first metal worker, Tubal-Cain, but also Jubal, 'the father of all such as handle the harp and pipe' (GENESIS, IV, 21, 22, Rev. Vers.)

⁵⁷ It may also be significant that according to Irish tradition the Milesians, who seem to correspond with the first Celtic immigrants to Ireland, are said to have been accompanied by a harper (W. H. Gratton Flood, *The Story of the Harp*, London, 1905). A detail like this, when given in connexion with a semi-mythical event is likely to have a deeper significance—e.g. the introduction of the harp—than when given in connexion with a purely historical event, such as an expedition of Edward I against the Scots.

A Croft in the Upper Nedd Valley, Ystradfellte, Brecknockshire

by SIR CYRIL FOX

THE streams which unite to form the River Nedd (or Neath) flowing into Swansea Bay rise in a chain of high hills known collectively as the Fforest Fawr, and individually as Vans—Fan Gihirych, Fan Nedd, and others. These rapid streams flow in deep and picturesque gorges across an upland region floored with carboniferous limestone, descending, near Pont-Nedd-Fechan, to the main valley of the Nedd, 15 miles from the sea.

This upland region, illustrated in FIG. 1, was much sought after by early man: we know for example that it was a meeting place of B¹ (Wessex) and A (East Anglian) Beaker cultures. At a later date an important Roman road, one of the many 'Sarn Helen's', traversed it; and chieftains cherishing Roman traditions lived in it in the sixth century, as the memorial of Dervacus the son of Justus (PLATE II), sited between the Llia and the Upper Nedd, testifies. Today the region is a sparsely populated sheepwalk.

In the upper valley of the Nedd the highest inhabited house is Coed-y-Garreg, about 1050 feet above sea level. Two-thirds of a mile further up the valley, where the bare upland is dominated by Fan Nedd (2178 ft.) is a farm named Blaen-Nedd-uchaf, deserted it would appear in the 19th century. No human habitations are marked on the 6-inch map (Breck. xxxvii SE) above this point; but in Nant-y-moch (FIG. 1), 300 yards from the junction of its stream with the Nedd and 700 yards above Blaen-Nedd-uchaf, my wife noticed a ruined croft, the subject of this note. It is in Ystradfellte parish, about 1250 feet above Ordnance datum (PLATE II).

FIG. 2 and PLATE III illustrate the steading and its site. It is in a sheltered position on the north side of the *nant*, on a comparatively easy and deep-soiled slope above the grassy rocky scarp bordering the stream bed. The shelf is, however, narrow, and the upper part of the house, which is set with its long axis at right angles to the contours, is deeply excavated into a rapidly steepening hill.

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The ford shown on the plan (FIG. 2) leads to a steep path up the south flank of the *nant* (from which the photograph was taken) and no wheeled vehicle could ever have reached the croft. This accounts

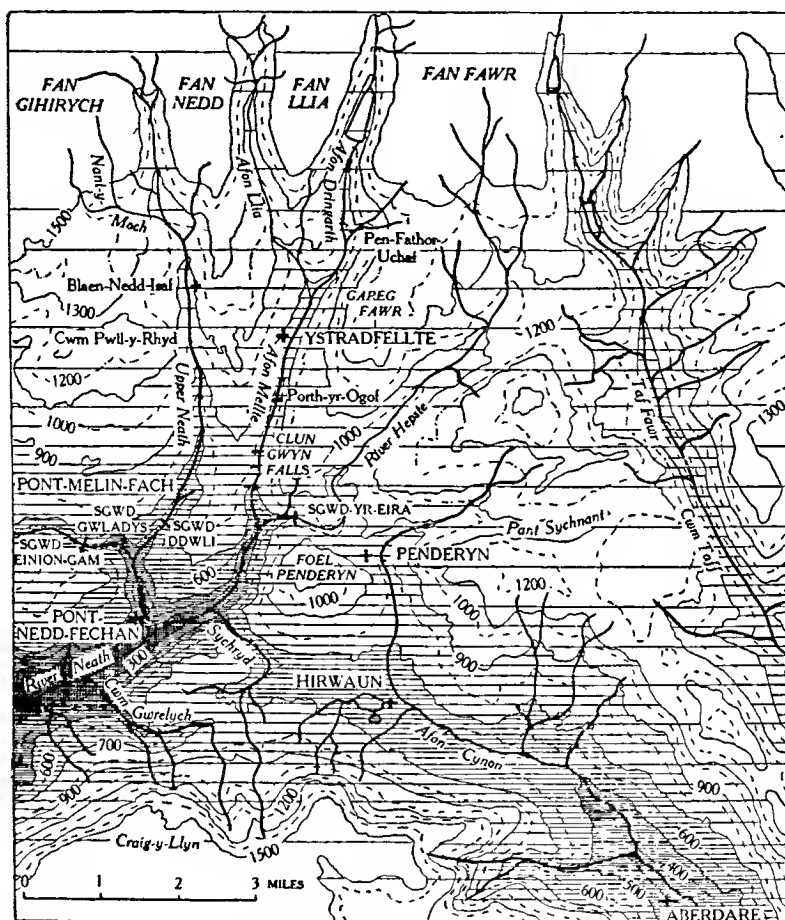


FIG. 1. MAP OF THE COUNTRY AROUND YSTRADFELLTE
From 'The River Scenery at the Head of the Vale of Neath', by Dr F. J. North
By permission of the National Museum of Wales

for the narrow (2 ft. 9 in.—3 ft. 0 in.) gaps in the wall of the yard, suited for cattle or sheep, pack-ponies, or folk on foot only. The roughly-aligned passage from the yard-gate downwards leads to a gravelled embayment in the rock-floored bed of the stream where animals could

A CROFT IN THE UPPER NEDD VALLEY

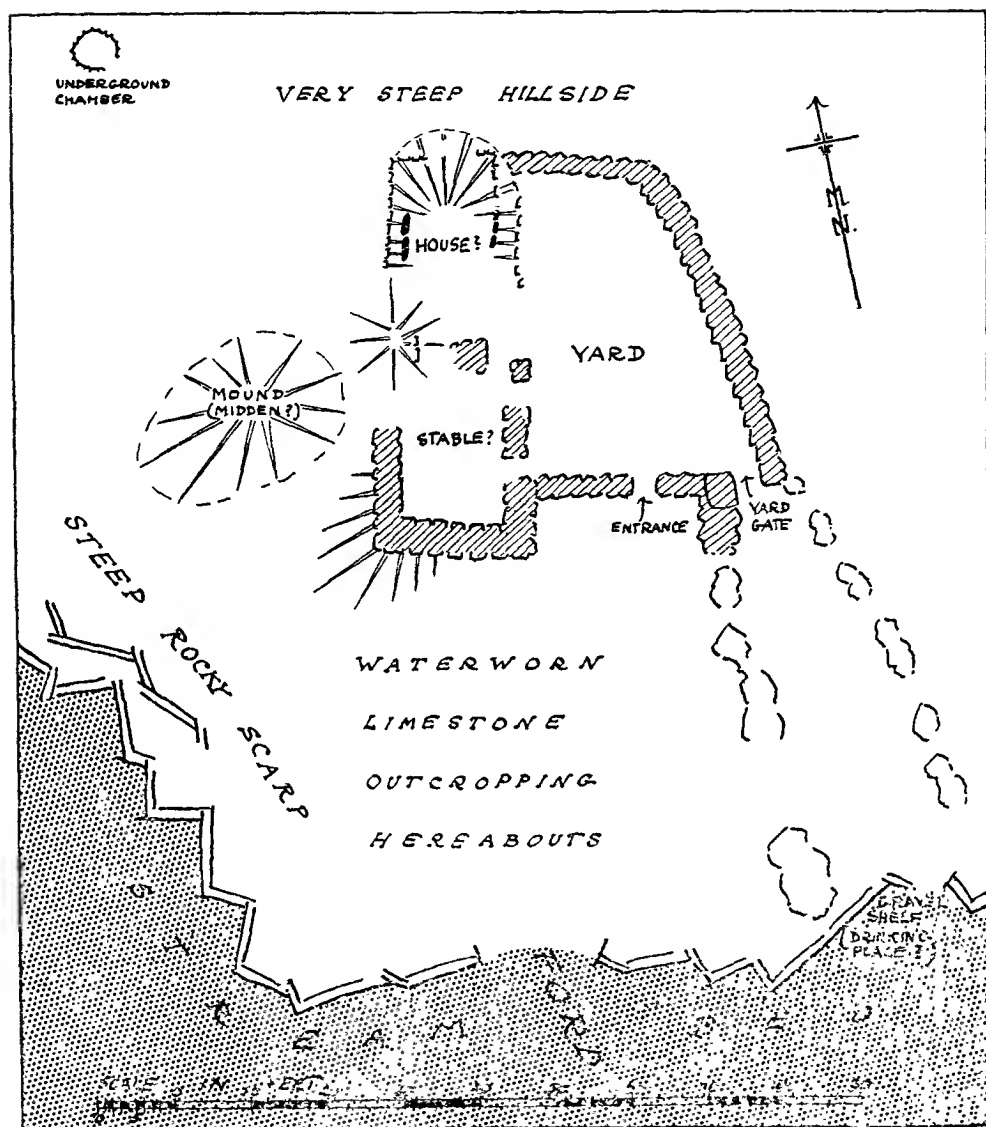


FIG. 2. SKETCH PLAN OF THE CROFT, NANT-Y-MOCH
(see pp. 363, 364)

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drink without being endangered by floods. Adjacent to the croft on the west is a grassy mound, possibly a midden.¹

The building is shown on a larger scale in FIG. 3. It is completely ruined and many features of its construction are obscure ; but a careful examination, in relation to the ground levels, of every stone of its structure now visible, enables its main characteristics to be determined.

It is built on an artificial platform levelled into the hillside, but the extent of excavation (or construction) required on such a slope is lessened by the fact that the house is on two levels, the upper two feet above the lower. The lower end then is slightly above the natural ground, the upper end much below it ; in the centre natural and artificial levels approximate. The two levels are defined by a cross-wall, which separates the building into two parts. Section AA' on the plan and a photograph (PLATE IV) illustrate these points.

The lower half of the building (PLATE II) is massively constructed of boulders and stones,² the steep terminal slope showing a 'battered' revetment wall, in one place of four courses. There is no lime mortar but clay may have been used ; the walls are about four feet thick. This lower half measures internally about 22 by 14 feet.

The upper half of the building is differently constructed. No effort seems to have been made to excavate to a vertical face in the hillside and so to build up an internal wall from the floor level ; instead, slabs of stone (orthostats) are sunk into the ground at the foot of the dug slope, mainly, it would appear, to hold up earth-slides, and then, higher up and further back, a revetment wall of small stones is built against the face of the excavation. At both angles and on the west flank this walling survives up to ground level ; in places four courses are visible. Orthostats are seen only on the flanks of the excavated area ; they are almost certainly present at the end of the structure, being hidden under earthy talus. These features are illustrated in the Plan, and Section BB', where the orthostats are shown in black.

The above considerations make it probable that the length of the upper half of the building measured on the floor was not less than 20 feet. The breadth between the orthostats is only 12 feet, but at the

¹ And a stone-walled circular pit, identified as a 19th century rabbit-trap. *Inf.* Dr F. J. North.

² The whole of the stones used in the erection of the building were masses of old Red Sandstone (grits and sandstones) derived from the glacial deposits which flank the local hills and formerly filled the valleys. The solid rock of the site is Carboniferous Limestone. *Inf.* Dr F. J. North.

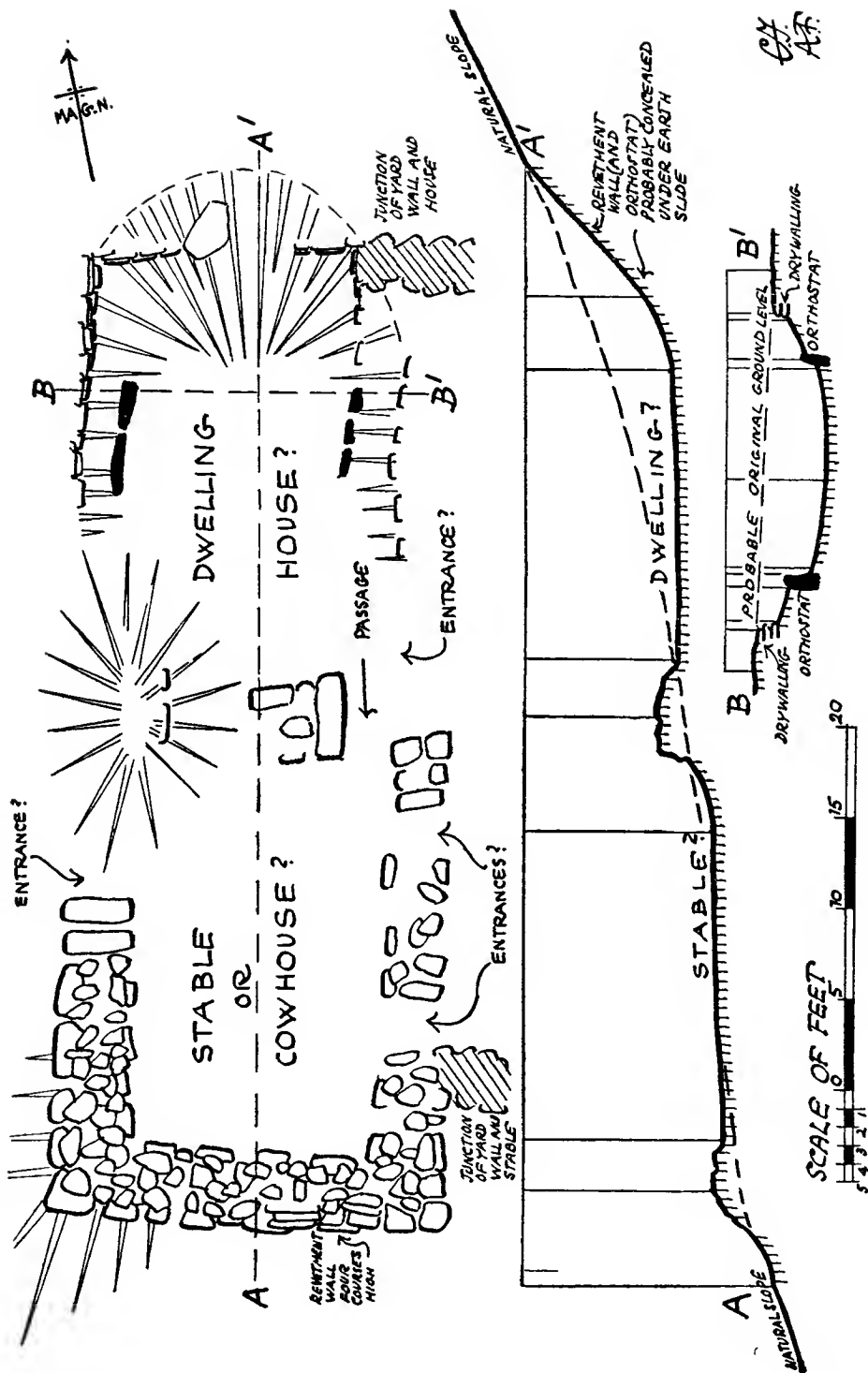


FIG. 3. SKETCH PLAN AND SECTIONS OF THE BUILDING, NANT-Y-MOCH (see pp. 366-8)

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southern end near the cross-wall where external and internal levels coincide the breadth of the floor must be much greater, being the distance between the faces of the revetment walls, namely 17-18 feet. It follows that the *roof span* here was some figure in excess of 17-18 feet. Now since the breadth of the lower half of the house, measured to the external walls, is 21 feet, it is probable that the roof in both halves was similar in span ; that is, to outward appearance the building was unitary, a single rectangle, its roof-tree probably sloping downhill, to maintain approximately the same height above the ground throughout. Finally, we may estimate the total overall length of the structure as not less than 55 feet. Probable or possible entrances, only to be proven by excavation, are shown on the Plan : three in the lower half of the house and one in the upper.

THE TYPE OF THE HOUSE CONSIDERED

The type of house represented at Nant-y-moch is not difficult to determine. A glance at the series of figures of Long-Houses in a recently published book—Mr Peate's *The Welsh House*,³ foreshadowed by an article in ANTIQUITY 1936, pp. 448-479, esp. p. 453, shows that it belongs to that group. The essential features of the Long-House as described by Mr Peate are : a cowhouse under the same roof as, and in continuation of, the dwelling, usually at a lower level ; direct communication between the two by means of a passage. The earlier dwellings (upper house, *pen uchaf*) are structurally single, the interior being partitioned off later as required for comfort or convenience. Many are single storied, but Long-Houses in which there is an original loft reached by ladder or staircase are known.

It seemed to me probable that the lower half of our house, *pen isaf*, was the cowhouse or stable, the upper, *pen uchaf*, the dwelling. The existence of the passage shown in the Plan is quite certain. The normal plan of a Long-House, moreover, which has a central hearth adjacent to the passage, suggested an explanation for the mound of rubbish, now grass-grown, on the west side of the cross-wall (see FIG. 3); it is likely to be the ruins of an (inserted ?) stone chimney stack. The houses of this class described by Mr Peate range from 36 feet upwards to 80 and 90 feet in length. He figures two of 55 and 57 feet respectively.

In pursuit of this analogy, I studied a group of Long-Houses in a district where they are still numerous, the beautiful and little-known

³ *Y Cymmrodor*, XLVII, 65-66 and figs. 8-20 ; *Antiquity*, XIV, 445.

A CROFT IN THE UPPER NEDD VALLEY

valley of the Cothi, Carmarthenshire.⁴ I found the parallels even closer than I had anticipated, the placing of several houses in relation to the immediate environment being exactly comparable with Nant-y-moch. One sees the artificial platform deeply levelled into the hillside and the alignment of the structure at right angles to the contours.⁵ One house showing these features, Pant-y-Bettws, in Llanfihangel-Rhos-y-Corn parish, was planned and photographed.

Pant-y-Bettws, situated 770 feet above sea level, is built of the local stone; it is 70 feet in length, the 'upper' and 'lower' houses being exactly 35 feet each. Its general appearance is illustrated in PLATE I; the sheep dog is standing by the door to the cow-stalls, the figure by the only entrance to the upper house (*pen uchaf*)—that opening into the feeding walk. The house has an original loft, the windows of which are seen under the galvanized iron roof which hides the original heather thatch: the great chimney crowning the cross-wall can just be seen. The steep rocky hillside into which the house nestles forms the background: the garden fronts the upper house. The photographer then walked into the cow stalls, while the visitor stepped up into the kitchen; PLATE V was taken, and needs no further elucidation.

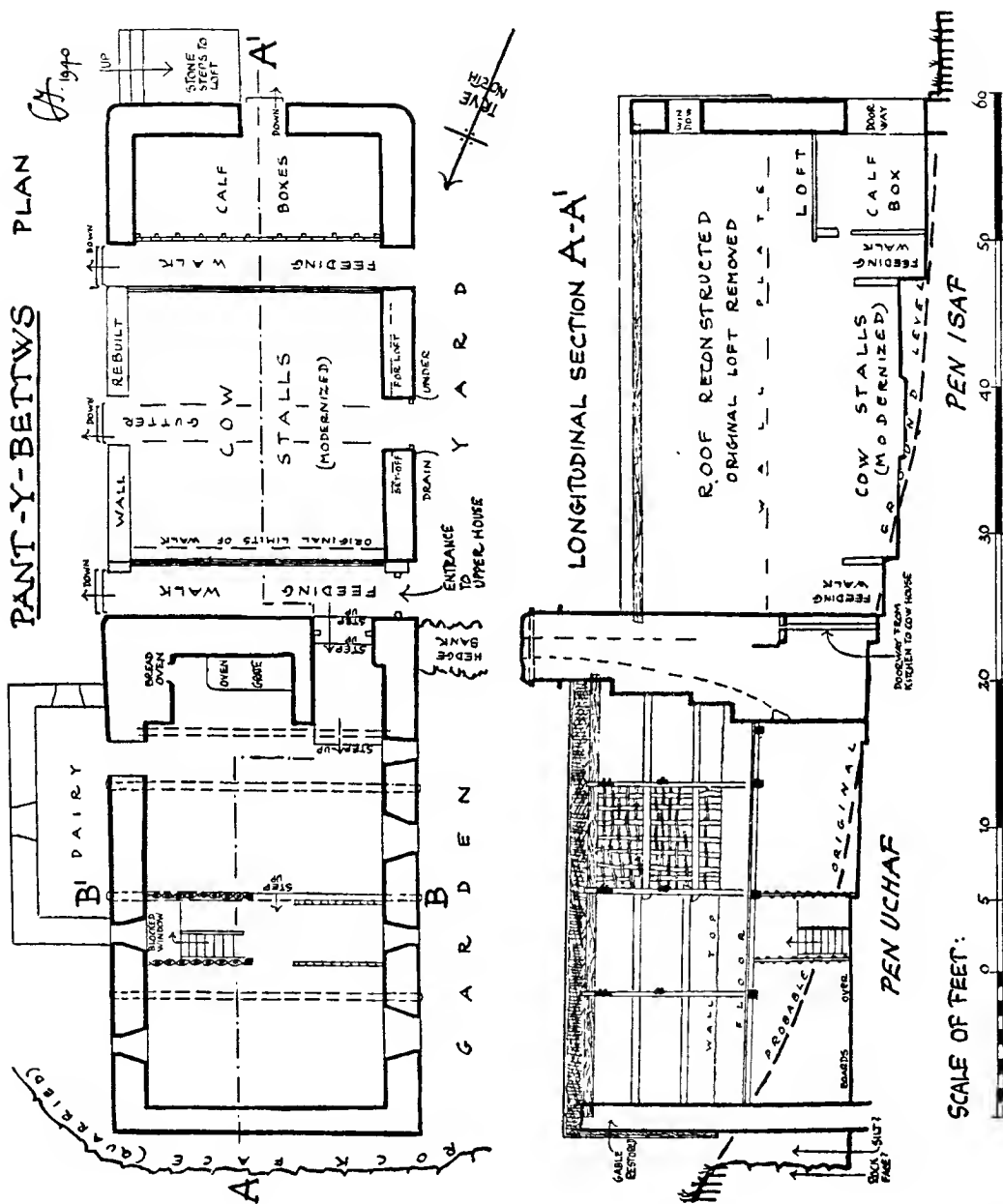
A plan, with longitudinal and cross sections, shows the characteristics of the structure more exactly. In the Plan, FIG. 4, original walling is shown in thick outline. The upper house is 'structurally single' as Peate describes the type; the wattled casing of the stairs to the loft is an interesting survival, due doubtless to the fact that the house has long been uninhabited. The great open fireplace is in the typical position. A recently-inserted fireplace at the other end is omitted from the plan. The feeding-walk is a passage entered at either end; it was originally wider. The lower house, *pen isaf*, has been modernized⁶ but preserves its ancient lay-out—feeding-walks, cow-stalls and calf boxes. The longitudinal Section, FIG. 4 (A-A'), shows how the house is built into the hillside, and illustrates the extent of excavation at the upper end and make-up at the lower.⁷ The structural

⁴ The assistance of my friends Captain and Mrs Joynson, of Brechfa, Carmarthenshire is gratefully acknowledged.

⁵ The difficulties of dealing with stormwater in the case of houses of 50 to 80 feet in length, if they were to be sited parallel to the slope of a Welsh hillside, doubtless provide the primary reason for the custom. Sited end-on, the problem of surface water is manageable, and the length of the house immaterial.

⁶ To comply with regulations governing milk-production.

⁷ These levels are not exact, but represent a close approximation.



A CROFT IN THE UPPER NEDD VALLEY

character of the loft is shown, the main trusses of the roof corresponding to the main beams of the loft floor. This floor is undivided and is lighted by 1 foot-square windows placed at floor level between the feet of the trusses.⁸ This is more clearly brought out in the Cross Section (FIG. 5), which also shows the wattlework of the staircase; the wattled

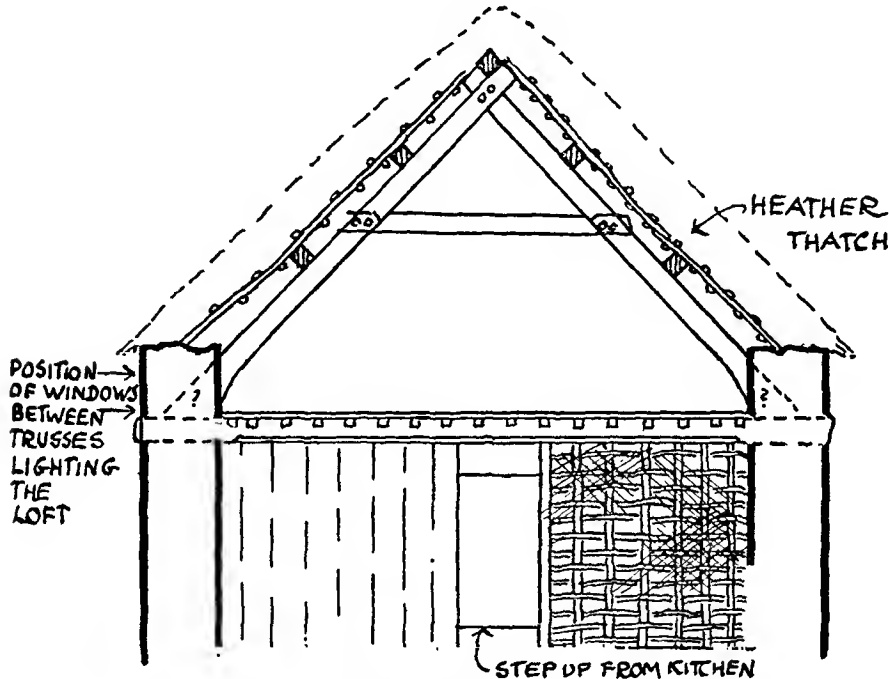


FIG. 5. PANT-Y-BETTWS: CROSS-SECTION OF UPPER HOUSE ON LINE B-B';
scale double that of Fig. 4

structure of the roof, replacing the common rafters of normal practice, appears in both sections.

A striking feature which I had not anticipated but which is not confined to this house, is the construction of the dwelling on the tilt. Wall-top, upper windows, floor-beams and ridge, all slope downwards. When in my first draft of this paper I wrote of Nant-y-moch 'its roof-tree probably sloped downhill', I little thought I should be able to

⁸ Probably pinned to the beams which go through the wall as suggested in FIG. 5; a most interesting constructional feature.

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study a still-existing house on a similar site embodying so primitive a feature.

If the longitudinal section of Pant-y-Bettws be compared with that of Nant-y-moch, it will be seen that the correspondence is striking. In both cases the change from excavated area to raised platform corresponds with the division between the upper and lower houses and with the entrance to the upper house. Again, the position and height of the rock-face in the Pant-y-Bettws section shows that the floor of the upper end of the house is seven feet below the natural level, which corresponds closely with the estimated depth of this feature at Nant-y-moch.

But there is no doubt that significant as the parallels detailed above appear to be, the structure at Nant-y-moch is in some respects cruder than any existing Long-House described by Mr Peate or referred to in this paper.

In the Pant-y-Bettws Plan and Section the rock-face is shown clear of the gable wall, which thus stands free on its platform. Actually the narrow space between rock and wall is here filled up, but I am assured that the construction is as I have shown, that the silting up is due to the house being neglected, and that the space is, in inhabited houses of the type, carefully kept clear of rubbish to prevent damp.⁹ At Nant-y-moch on the other hand, the excavation is, as we have seen, a burrowing into the hillside with the back wall a revetment, not a free-standing structure.

And there is a difference still more significant. At Nant-y-moch the excavation is horseshoe-shaped; the upper end of the house was thus tucked into the hillside and was unlighted.¹⁰ At Pant-y-Bettws *the excavation is extended on either flank of the house site*, especially on the entrance side facing sw where the main fenestration is, in order to provide adequate lighting and fresh air to the upper end. (The 'garden' in the plan, then, is an excavated rock-floor). This is not exceptional; I have seen the same technique at Caedwgan, in the same parish. It is an obvious and natural development, as the standard of comfort and convenience became gradually raised, and window-glass obtainable. I think then, that at Nant-y-moch we are dealing with a

⁹ The section is restored from the evidence provided by Caedwgan, a similarly placed Long-House in the same parish.

¹⁰ It might be thought that the rough boulder construction of the Lower House at Nant-y-moch would be another feature requiring notice in this connexion, but it is a matter of observation that such construction is of frequent occurrence in the Welsh uplands at almost any date.

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structure of Long-House type which has elements typologically ancient and unrepresented in inhabited Long-Houses, and that we must look elsewhere for parallels to its primitive features. We need not look far ; for these features are to be found in the moorland platform houses described in *ANTIQUITY* in 1934,¹¹ five of which were subsequently excavated by my wife on Gelligaer mountain, Glamorgan. One example was dated by stratified finds as not later than the 14th century, and it was held that since the type, of which some 30 examples are now known, is not Saxon or Norman, its origin must be sought in Wales prior to the Norman Conquest.¹²

The deeply-excavated and horseshoe-shaped end, revetted with dry walling, is seen in the Lower House, Dinas Noddfa¹³ and in the Centre and South Houses above Graig Spyddyd.¹⁴ Moreover, evidence of human occupation in the shape of a refuse pit, a refuse trench, a fireplace, charcoal, and broken pottery, were in this series of Houses confined to the upper (excavated) end of the platform, as the Long-House analogy indicates was the case at Nant-y-moch. The Centre House at Graig Spyddyd, 1350 feet above sea level, which provided the evidence of medieval date for the series, is illustrated in this paper (FIG. 6) : it will be observed that the same contrast is seen in the character of the structure—revetment above, walls, in this case of turf, below—as at the Nant-y-moch croft. This house is comparable in size to that at Nant-y-moch (63 feet by 24 feet). I cannot show a section : but the slope-symbols on the Plan show the limits and character of the excavation into the hillside, and the ramp at the lower end.

But we must not jump to the conclusion that Nant-y-moch represents the same plane of development as Graig Spyddyd. The platform at Graig Spyddyd is on a single, not a double level as at Nant-y-moch. This double level is surely a significant modification ; it was undoubtedly determined by the difficulty of preparing a level site, large enough for both parts of the Croft, on a sloping surface, where the rock (the Carboniferous Limestone) dips towards the stream at an angle of about 8°, and the superficial deposits thin out rapidly in the same direction.

The double level may, therefore, have originated when cultural changes in Wales caused a movement of population and economic

¹¹ C. and A. Fox, *Forts and Farms on Margam Mountain, Glamorgan*, pp. 395-412.

¹² Aileen Fox in *Arch. Camb.*, 1937, pp. 247-268 ; 1939, pp. 163-199.

¹³ *loc. cit.*, 1937, p. 251, fig. 2.

¹⁴ *loc. cit.*, 1939, fig. 3, p. 167 and fig. 4, p. 168.

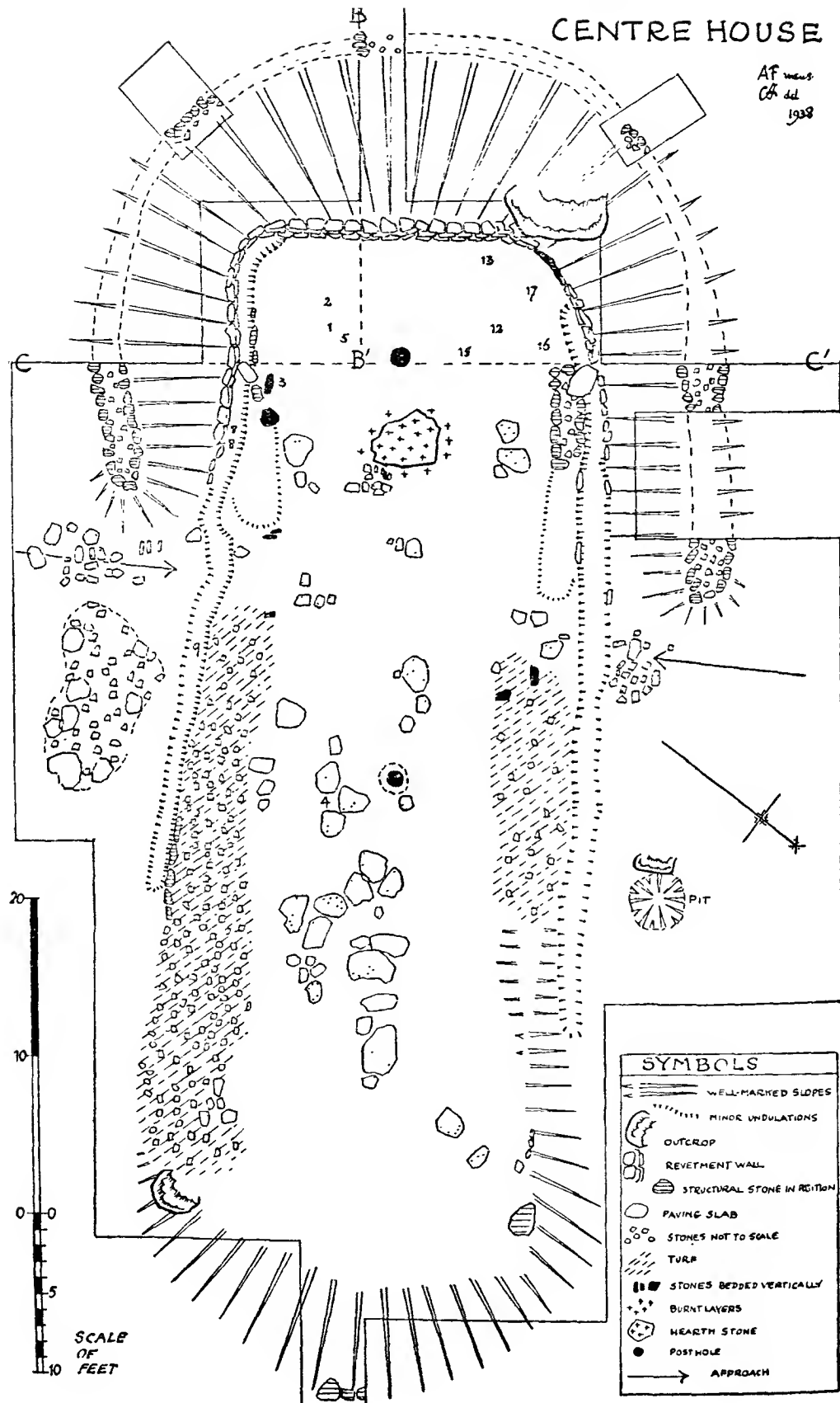


FIG. 6. THE 'CENTRE HOUSE', GRAIG SPYDDYD, GELLIGAER, GLAMORGAN (see pp. 373, 375)
After Aileen Fox, *Archaeologia Cambrensis*, 1939, fig. 3, p. 167. By courtesy of the Editor, *Arch. Camb.*

A CROFT IN THE UPPER NEDD VALLEY

activity from exposed platform sites such as those occupied at Gelligaer, to sites lower down the valley sides, where slopes are generally steeper. The secondary advantage, the preventing of cow-house drainage from seeping into the living quarters, would at once have been recognized, and may have caused the system to be adopted even on sites where it was not a matter of necessity.¹⁵

For the convenience of the reader, the essential details of the three houses are tabulated below.

Name	Elevation	Character	Overall	Date
Centre House, Graig Spyddyd, Glamorganshire	1350 ft.	Single level platform at right angles to hill contours. Hearth at upper end. Horse-shoe-shaped excavation into hillside, hooded, with curved corners to revetment. Internal drainage channel. Turf walls at lower end of house.	63 by 24 ft.	Early 14th century
Nant-y-moch, Ystradfellte, Brecknockshire	1050 ft.	Double-level platform at right angles to hill contours. Cross wall dividing 'upper and lower houses'. Horse-shoe-shaped excavation into hillside, revetted rectangularly. Stone-walled lower house.	55 by 21 ft.	?
Inhabited Long-Houses, as represented by Pant-y-Bettws, Llanfihangel-Rhos-y-Corn, Carmarthenshire	770 ft.	Double platform (with subsidiary changes of level) at right angles to hill contours. Structure in two equal halves, dwelling (upper) and cow-house (lower). Broad excavation into hillside; the stone building stood free, windowed on both sides.	70 by 21 ft.	Early 17th century

To return to our comparison: the severely regular character of the revetment in the upper house at Nant-y-moch, so unsuited to a scooped-out hillside, would appear to be typologically later than, and has no parallel in any of, the houses at Gelligaer. The stone-cored embankment (hood) shown in the plan of the Centre House (see FIG. 6), also, is not represented at Nant-y-moch. And I should be surprised if

¹⁵ These two paragraphs owe much to my colleague Dr North's interest in the problem.

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the drainage channels flanking the latter house and partly inside the revetment, which served, in part, domestic uses, have any counterpart at Nant-y-moch.

Summing up the various aspects of the problem provided by the Nant-y-moch ruin, I suggest that it is probably a Long-House embodying early features not hitherto recognized as elements of the type; that these early features are comparable with, and explicable by reference to, the medieval moorland platform house as exemplified at Gelligaer; and that consequently, this platform house may prove to be the prototype or one of the prototypes, of the Long-House in Wales. More than that cannot at present be said, for the purpose and function of these Gelligaer houses is still unsolved, and they occur in pairs and triples which the Long-House proper does not. Nant-y-moch, then, is provisionally regarded here as the middle term of a typological sequence; that the sequence is likewise chronological is probable, but extensive overlaps are to be expected.

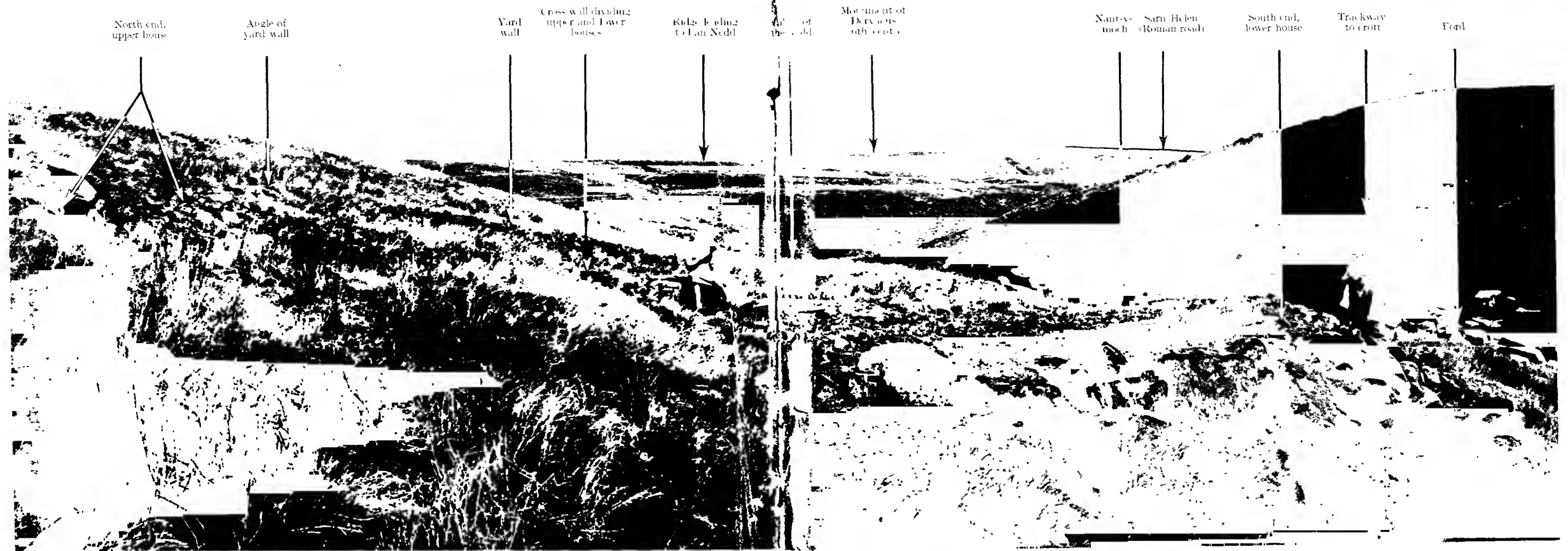
PLATE I



PANT-Y-BELLWS, A 17TH CENTURY LONG HOUSE, FROM THE SOUTH DOORWAY
TO THE COW STALLS (*PEN ISAF*) (see p. 369)

The figure is standing by the entrance to the dwelling (*pen uchaf*) and feeding walk
Ph. National Museum of Wales

PLATE II



THE NANT-Y-MOCH BUILDING, SHOWING ITS POSITION AT RIGHT ANGLES TO THE CONTOUR OF THE HILL-SIDE, AND THE BOULDER-CONSTRUCTION OF THE WALL OF THE LOWER HOUSE (see pp. 393, 394)

PLATE III

Ph. National Museum, Cardiff



THE NANT-Y-MOCH CROFT FROM THE SOUTH SIDE OF THE RAVINE (see p. 393)

Ph. Dr L. J. North

PLATE IV



Orthostats - Revettment

THE NANT-Y-MOCH BUILDING, LOOKING SOUTH, SHOWING THE TWO FLAVES (see p. 393)

Ph. Dr L. J. North

PLATE V



PANT-Y-BUTHWS - INTERIOR (see p. 360)

The kitchen from the cow stalls, looking across the feeding walk and the half closed entrance door (on left).
Ph. National Museum of Wales

A Geologist amongst the Cairns

(Notes on the value of cooperation)

by F. J. NORTH

SHERLOCK HOLMES claimed to be able to recognize one hundred and forty different varieties of tobacco ash, but he could not have solved the Mystery of the Golden Pincenez had he not been able to examine the ash as it lay upon the floor of a professor's study.

Similarly, a geologist may be able to identify any number of rocks from fragments collected during the course of an archaeological excavation, but he will not be able to indicate the story which the rocks may have to tell, and most likely may not even realize that there *is* a story to look for, unless he can see the stones *in situ*, and study not only their lithological characters, but also their relation one to another and to the general assemblage of materials with which they are associated.

For example, I have recently received for examination, a collection of stone chips and soils made during the course of an excavation in South Wales, but it happens that the geology of the vicinity is such that the characteristics that would provide satisfactory answers to most of the questions put by the excavator, are dependent upon the field-relations and structures of the rocks rather than upon the properties that can be studied in small fragments of them; and not having seen the country surrounding the site, or the stones in their original position, it will only be possible for me to give names to the rock-types that are represented, and not to discover what the rocks may have to say about the aims and methods of the builders of the cairn.

On the other hand, an examination of such material *in situ* has frequently proved to be highly instructive; it has in some cases confirmed conclusions arrived at on archaeological grounds, or has served to explain such conclusions, whilst occasionally it has provided a story that purely archaeological enquiry could not have revealed, and always it broadens the basis of the investigation. It is the purpose of this paper,

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therefore, by outlining the results of recent co-operative work, to emphasize the desirability for proper geological examination of sites in course of excavation—to remind archaeologists that geology provides them with a useful instrument of research, provided that the geologist recognizes the peculiar nature of the problems with which he will be called upon to deal.

This is by no means the first time that the value of a geological basis for archaeological investigation has been indicated: Sir Cyril Fox drew attention to it in his *Archaeology of the Cambridge Region* (1923), and the present writer has described some recent results of the application of geology in many kinds of archaeological problem.¹

The importance of making a geological investigation upon the site and not merely a laboratory examination of material collected by an excavator was, however, recognized by geologists long before archaeologists began to act upon the principle involved.

Quite often, even today, one is asked to report upon a fragment of stone, accompanied by no other information than that it was obtained from an excavation on such and such a site; and yet as far back as 1696, John Woodward, who founded what subsequently became the Woodwardian Chair of Geology at Cambridge, prepared a pamphlet of *Brief Descriptions for making observations and collections, and for composing a travelling Register for all sorts of Fossils*—including under 'fossils', as was the custom in his day, not only the objects to which that name is now applied, but also rocks and minerals, and anything else dug out of the earth, like stone implements and flint arrow-heads, which he regarded as having been made by men who lived before the discovery of iron, and compared with similar objects used by 'natives yet barbarous'!

The opening paragraph of this tract shows an astonishing appreciation of vital points, all too often neglected even in these enlightened days. It runs as follows:—

1. *Of Keeping a Register of the Fossils as they are collected.* By means of Paste, Starch, or some fit Gum ought to be fixed to each Sample collected, a bit of paper, with a *Number upon* it, beginning with No. 1, and proceeding to 2, 3 and so on . . . Then in the Register, enter Numbers answering to those fix'd on the Fossils, and under each Note, 1, *what sort* of Fossil or Mineral 'tis expected to be.
2. *Where 'twas found.* 3. *Whether there were more of the same, and in what Number or Quantity.* 4. *Whether it was found on the Surface of the Earth.*

¹ 'Geology for Archaeologists', *Archaeological Journal*, 1938, xciv, 83-115. 'The Background of History in North-eastern Wales', *Archaeologia Cambrensis*, 1932, 1-47.

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5. Or, if it lay deeper, notice at what *depth*. 6. In what *Posture* or *Manner* it lay. 7. *Amongst what* sort of terrestrial matter 'twas lodged. 8. Whether in a *Stratum* or Perpendicular Fissure.

A similar desire for details concerning the mode of occurrence of the material sent to him was expressed by William Buckland, Professor of Geology at Oxford, who first demonstrated the reality of the existence of 'antediluvian' animals in Britain, largely upon the evidence of his discoveries (in 1821) in Kirkdale cave in Yorkshire, a subterranean chamber which he showed to have been used by hyaenas as a den.

When Miss Talbot, of Penrice in Gower, wrote telling him of the discovery of a new cave²—subsequently famous as Paviland Cave, once a home of Palaeolithic man—he immediately sent the following list of questions :—

1. Was the Bottom of it flat or inclined ?
2. What was its size—& how many fissures or side vaults had it in communication with its interior, and did any of them ascend to the surface ?
3. Is it in the Cliff or Inland & how discovered ?
4. What was the Position and Depth of the Mud ?
5. Are there any pebbles in it ? or anywhere fragments of rock ?
6. Was there a Crust or Stalagmite above the Mud & a 2nd crust below it dividing it from the Rock—or any Stalagmite investing the Bones ?

If you say the Bones were Broken, was this from Decay and time, or were they fragments the edges of which were old as if broken before the Mud had got near them, by Beasts inhabiting the Den ? . . . the moment I can stir I will if possible run down to get a peep at what remains in the Cave, for as yet I do not understand its history nor how the animals got there—meantime pray have the mouth *closed* up again to prevent total destruction.

For the sake of homogeneity the illustrations here given in support of my thesis will be confined to observations that it was my privilege to make in connexion with the excavation of two Bronze Age sites—one at Coity near Bridgend in South Wales, excavated by Sir Cyril Fox in 1937,³ and one near Crick in Monmouthshire, excavated by Dr H. N. Savory in 1939.⁴

The first of these (which Fox called the Simondston Cairn from the name of the nearest farm) was a low circular mound that proved to be a cairn denuded, by agricultural processes, to the lowest layer of the

² Unpublished Buckland correspondence, deposited in the National Museum of Wales by Dr Mervyn H. Gordon.

³ Cyril Fox, 'Two Bronze Age Cairns in South Wales . . . Bridgend', *Archaeologia*, 1938, LXXXVII, 129–180.

⁴ An account will be published in *Archaeologia Cambrensis*, December 1940.

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stones of which it had been composed ; the cremation burials, primary and secondary, were however intact. The archaeological results of the excavation, which are both important and interesting, do not here concern us, but observations, made from time to time as the stones were exposed, soon indicated that geology could do more than merely provide names ' to be fixed to each sample collected '.

Five kinds of rock could be recognized—all of them native to the neighbourhood, but all different from the rock that floored the actual site on which the cairn had been erected. Each variety had been used for a particular purpose, and it was apparent that the builders were thoroughly familiar with the distribution and characteristics of the rocks in the square mile or so that lay to the east of the cairn.

The local superficial deposits included soil, and a subsoil with more or less rounded stones neither suitable nor present in sufficient abundance to be exploited for cairn-building. The rock-floor of the site belongs to the geological formation known as the Lower Lias, which here consists of alternations of limestone and shale.

The shale, being very fissile and brittle, and occurring in thin beds, was obviously of no use as a medium for building, but on the face of it the limestone might have been considered suitable, because, occurring in definite beds a few inches thick, and being intersected by vertical joints, it would have been quite easy to dislodge roughly rectangular blocks, large enough to be useful and small enough to be easily handled.

Indeed, in many parts of its outcrop the Liassic limestone has been used as a building stone throughout the historic period. It happens, however, that near Coity most of the limestone is highly argillaceous and incipiently fissile, so that although when freshly dug it is hard and massive, a comparatively short exposure to the weather reduces it to a mass of flaky rubble. This fact was evidently well known to the builders, since they made no attempt to use the rocks for the general fabric of the mound, although they did not trouble to remove from the site the few blocks that had to be shifted when certain small pits were dug.

Underlying the Liassic strata, and outcropping south and east of the site of the cairn, is the sandstone that constitutes the local representative of the Rhaetic Formation. This rock consists of rather large quartz grains, not very tightly held together by a siliceous cement ; consequently, although it resists exposure to the atmosphere and to the waters that are present in and under the soil, wind and abrasion tend to round off the corners of exposed masses.

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The sandstone is affected by somewhat irregularly distributed bedding planes and by joint planes, so that blocks of varying size can be dislodged from weathered outcrops by means of simple levers and wedges. West of the cairn the sandstone is exposed in the floor of a small tributary of the Ogmore river, but the rock does not project above the general level of the soil, and although well-weathered masses could be picked from the surface, fresh material could only have been obtained by excavation; about 250 yards away to the east, however, where the ground slopes towards a tributary of the Ewenny river, the denuded edges of the beds are well exposed and form miniature crags. It was from here that the mound-builders must have obtained the bulk of their material, for, with the exception of a score or so of relatively large masses and a few smaller pieces of other rocks used for special purposes, the stones—and there were hundreds of them—were sandstone blocks such as could have been obtained by a simple quarrying process from these exposures.

For the primary burials, a cist measuring 3 ft. 5 ins. by 2 ft. 9 ins. inside, had been constructed from large slabs of sandstone similar to that already described as having been used for the rest of the cairn. It thus transpires that the essential elements of the cairn—the walls and floor of the cist and the stones used to make the core of the mound—were all of one kind of rock, derived from one group of outcrops, situated east of the site.

Thus far the story revealed by the stones was quite straightforward; but on the southern margin of the cairn there were several relatively large blocks that were obviously supplementary to the simple cairn-cist combination. Some of these were of Rhaetic sandstone like that used for the remainder of the cairn, but others were quite different and included red and grey conglomerates derived from the Triassic Formation, and shelly limestone (different from the limestone under the site) from the Lower Lias. The red and grey conglomerates outcrop northwards and eastwards of the site, and from three to four furlongs from it, while the shelly limestone outcrops about three hundred yards to the southeast. Their distribution on the site is indicated in FIG. 1, which is based upon the plan made by Sir Cyril Fox and relates to about two-thirds of the cairn. The remainder of the plan has been omitted in order to save space, because only one type of rock (sandstone) was present and no special structures were represented in the area to which it relates.

The general nature of the groups marked I to V is indicated in one

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of the sections in FIG. 1 : there was a large thick slab (in one case two slabs) leaning against smaller and usually thinner ones, which in turn rested against a face of undisturbed clay into which small stones had been pushed as if by way of reinforcement. 'Each group', wrote

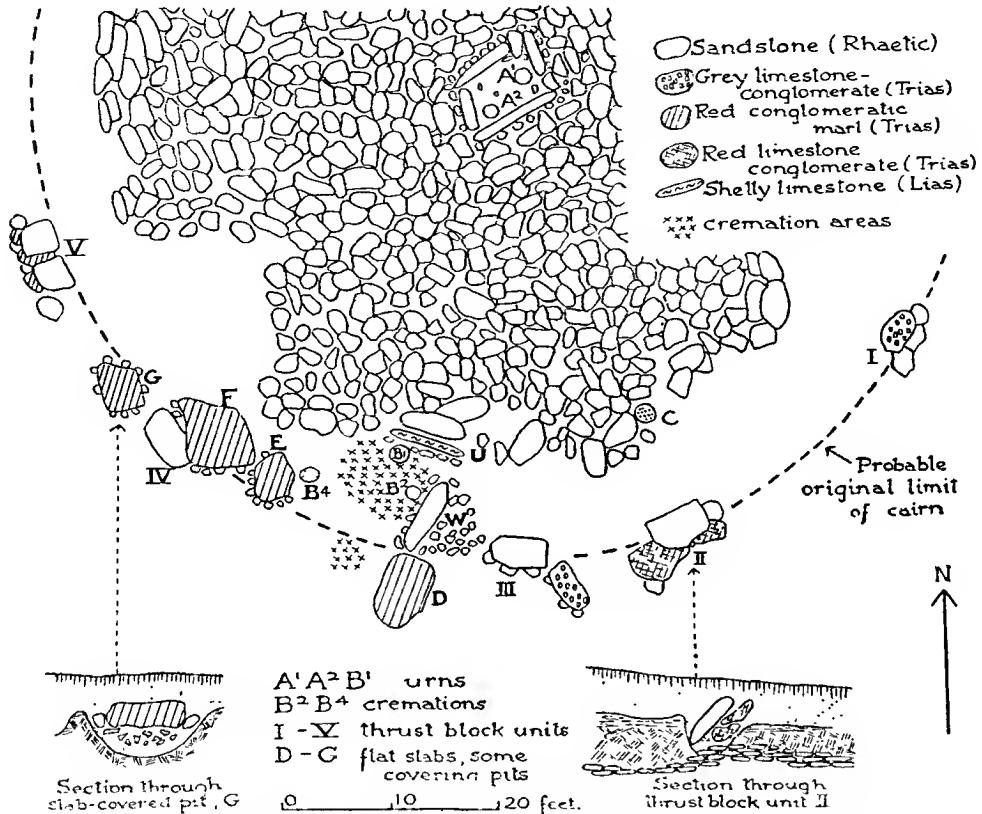


FIG. 1. PLAN OF PART OF SIMONDSTON CAIRN, NEAR BRIDGEND, EXTRACTED FROM DRAWINGS MADE BY SIR CYRIL FOX AND PUBLISHED IN *ARCHAEOLOGIA*, VOL. 87 (1938), PLATES 49 AND 50

Fox, 'represents . . . a *thrust block* or bedded buttress in which the initial pressure was taken by the surface of the carefully chosen upper slab and was extended outwards by the slabs . . . below; each thrust block played its part in rendering the cairn stable'.

The primary elements in these 'buttresses' were blocks of Rhaetic sandstone, comparable in size to the smaller elements of the cist walls,

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and in some cases the same rock had provided the material for the packing stones, but in nos. I, II and v *pieces of grey or red Triassic conglomerate were used*. In the case of no. I, where the primary element seemed to be missing, the topmost stone was a slab of grey Triassic limestone conglomerate.

The lowest layers of several of the thrust block groups included masses of Liassic limestone, derived from a nodular bed disturbed during the excavation of the holes made to receive the blocks. This rock is more durable than the evenly bedded limestone that predominates on the site, and which, as already indicated, does not stand up to weathering. In one case nodular limestone alone was used for the packing blocks.

Other large blocks, e.g. D, E, F, and G, lay more or less flat and either on or a little below the level of the ground. They were of red conglomeratic marl derived from the Trias, and two of them, E and G, were found to cover holes that had been dug and refilled with loamy earth and small stones (see FIG. 1). In the earth there were flecks of charcoal, and in one case (E) a sliver of burnt bone. Beneath the slab F there was a layer of similar loamy earth with fragments of charcoal, not filling a hole but resting on undisturbed clay. The slab D was separated from the clay by two or three inches of soil without artifacts, and seemed to serve no useful purpose at all.

The third group of stones in this region comprised a large mass of Rhaetic sandstone (w) and a mass of shelly Lias limestone (u) each of which had originally been placed upright, although each had since assumed a tilted position. They were associated with an area that had been disturbed in connexion with some secondary burials, and seem to have been placed with a view to protecting the area against the thrust of the mass of the cairn.

The foregoing notes concerning these special features along the southern margin of the cairn do less than justice to the skill displayed in exposing and explaining the stones, for, weathered and soil-stained as they were on the site, the differences were by no means as obvious as are the symbols by which the various rocks are indicated in FIG. 1. Any practical results that the geological observations may have had are entirely due to the way in which the mutual relations of the stones had been preserved, although in the early stages of the excavation the temptation to shift many of them as being without significance must have been very great.

The general conclusions arrived at on archaeological grounds were

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that the date of the primary burials, 'judging from the pottery, is probably Middle Bronze Age A, about 1500 B.C.' and 'at a later date in Middle Bronze Age A the southern margin of the cairn was used as a cemetery for a folk who cremated their dead'.⁵ It was also assumed that the buttresses were part of the original scheme and that the slab-covered holes were associated with the secondary cremation burials. Archaeologically speaking these were obvious and perfectly reasonable conclusions, but subsequent re-examination of the geological evidence (during the preparation of the present paper) prompts an alternative suggestion based upon the following considerations :—

I. For the main mass of the cairn and its primary cist the rock used was the Rhaetic sandstone : this rock was also used for the principal stones in the thrust blocks.

II. Large slabs of grey and pink conglomeratic limestone and marl of Triassic age were used to cover something placed on the ground or in pits for some special purpose. These stones were brought from a greater distance than the Rhaetic sandstone, were of distinctive appearance, and evidently had special significance.

III. For supporting some of the thrust blocks the builders used flat pieces of the grey and red Triassic rocks. These were fragments such as might have broken away from the larger slabs already mentioned, during or after their removal to the site, since the conglomerates are affected by irregular curving planes of weakness, between the major and rather widely separated bedding planes.

IV. It seems unlikely that the smaller pieces of Trias would have been specially brought from exposures half a mile away for the purpose of packing some of the thrust blocks, when masses of sandstone, or of nodular limestone, were already available for the purpose ; and their presence in such situations suggests that the erection of the thrust blocks and the introduction of the larger Trias slabs were contemporary events. The sandstone elements of the thrust blocks could have been picked from the stones around the margin of the cairn as originally erected, for several of the marginal stones (especially in the region where there are no thrust blocks) are as big as those used as thrust blocks.

V. It is hardly likely that, with so gently sloping a site (about 2°), those who conceived the cairn would have realized the necessity for introducing buttresses, but one of the following alternatives seems feasible :—

(a) The southern margin of the cairn began to move soon after erection, and the thrust blocks were constructed : this operation was associated with some ceremonial activity involving the use of special and distinctive stones—the large flat slabs of Triassic conglomerate.

(b) Some ceremonial activity, after the mound had been completed, involved the digging of small pits and the introduction of special and distinctive stones : this revealed (or led to) instability of the margin, to cope with which the thrust blocks were introduced.

VI. If either of these interpretations is correct the secondary burials were incorporated into the mound *later* than the thrust blocks and the slab-covered pits.

VII. Granting this, the anomalous positions of the sandstone block W and the Trias block D can be explained by supposing that, ignorant of the structural features of

⁵ Fox, *ibid.*, p. 141.

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the cairn, the 'cemetery people' dug into it and disturbed one of the thrust blocks and one of the Triassic slabs. The latter was displaced southwards, and became the block D, which, as we have already seen, appeared to serve no useful purpose where it lay; while the stone W may be interpreted as the principal element of a thrust block (originally between Nos. III and IV) utilised in order to assist in protecting the new burial area; the group of smaller stones on the side of it remote from the burial area, a group for which there is no parallel elsewhere on the site, may in these circumstances be regarded as the packing stones originally associated with the slab D (and comparable to those still *in situ* under the slabs E, F, and G) used to increase the stability of W in its new position.

VIII. For the protection of the burial area another large flat stone was needed in addition to W, and a slab (U on the plan) of shelly Lias Limestone—not otherwise represented on the site—was used. The nearest place where (at the present time) such a rock is obvious and easily obtained, is in a small hollow southeast of the cairn, where rises a spring that feeds the stream which flows through Nant Bryn-glâs to join the Ewenny. Perhaps the 'cemetery people' lived near this spring.

It is recognized that these suggestions are based solely on the relations between the various kinds of stone upon the site, and when I discussed them with Sir Cyril Fox (since they were conceived long after the preparation of the geological notes supplied for his Simondston paper) he pointed out that although they offer a very acceptable explanation for the relatively disordered condition of the stones in the region between the thrust blocks III and IV, they raise difficulties of their own.

For example, the fact that small quantities of charcoal were found under the Trias slabs, and a sliver of burnt bone under one of them, shows that cremations had taken place before the placing of the slabs, and since charcoal was absent from the site generally (very little being found even in the cist, and the urns of the primary burial) it can be argued that the charcoal under the slabs was more likely to have been associated with the secondary cremations than to have been already present in the fabric of the mound when the residues of these cremations were buried. The only way in which this objection can be met is by assuming that such charcoal as may have been dropped by the primary burial people was present only in the superficial layers of the mound, and that its general absence is due to the fact that those superficial layers have been almost entirely lost as a result of agricultural operations. Some of the superficial material may, however, have survived near the periphery, where the surface of the mound merged into the ground level and where subsequently the Trias slabs were placed.

Another difficulty arises from the fact that the Triassic slab F rests partly upon one of the thrust blocks: although (taken in association with the use of fragments of similar Triassic rock as packing material under the sandstone blocks constituting the principal elements of other

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thrust blocks), this implies that the two kinds of rock were being used at the same time, the skill displayed in planning and erecting the thrust blocks is not consistent with the disregard of them displayed by the placing of the slab F. At present the only reply I can give to this objection is one that rather begs the question, and suggests that, granting the difficulty in explaining why, having made a thrust block, the Simondston people partly covered it by a slab associated with some observance that involved making small pits and covering them with large flat stones, it is even more difficult to imagine that a people who used one kind of rock only (sandstone) for the mound, the primary cist, and the principal elements of the thrust blocks, should have gone half a mile away for a few pieces of a different rock to put under some of the thrust blocks, when hundreds of suitable pieces of sandstone, and a quantity of the nodular limestone which was disturbed in preparing the sites for the blocks, were already to hand.

These two difficulties apart, the geological explanation of the disposal of the stones around the southern margin of the cairn, does not, I am assured, involve archaeological improbabilities. That they can be put forward at all shows that the study of such a site need not end with the completion of the excavation and the publication of the report.

The modern technique of cairn excavation usually involves complete or almost complete destruction of the fabric and the disturbance of every conspicuous stone, and the record of the work might easily become a completed and unalterable statement. When, however, as in this case, every item of evidence is impartially recorded, in sketch or in words, whether it appears important or not, whether it is essential for the current interpretation of the excavation or not, and even if it appears at the time to be quite adventitious, then research need not come to an end when the last sod of turf has been replaced, and the last proof of the report returned to the printer.

A problem may be re-considered in the light of new discoveries elsewhere, or some special feature may be separately studied more closely than is possible under conditions that obtain during the course of an extensive excavation, when fresh facts are being revealed with bewildering frequency and the physical conditions are by no means helpful.

Apart from the light which geological investigation threw upon the methods and local knowledge of the Simondston mound-builders and their immediate successors, it also 'provided the first approach to proof of a visual relation between settlement and burial places in the Bronze

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Age, a relation which is often assumed to exist, without proof'.⁶ This conclusion was arrived at because the situation of the mound, upon the crest of a saddle, was such that it 'was visible for a considerable distance from the east side, but only from a short distance on the west side', and it was from the east—from a region drained by a small tributary of the Ewenny river and eminently suitable for settlement—that the builders derived all their stony material.

Another site in which the stones had a story to tell was excavated in 1939 by Dr H. N. Savory. It was a Middle Bronze Age barrow situated near Crick in Monmouthshire, and from an archaeological point of view was somewhat disappointing, for it yielded no spectacular finds and presented no striking features in its construction.

All the earthy material of the mound was derived from the immediate vicinity, and was a mixture of the local soil and the subsoil to a depth from 15 to 18 inches beneath the surface. The massive elements of the cairn were confined to a simple peripheral ring of stones (FIG. 2), varying in size from boulders nearly six feet across down to mere flakes no larger than the palm of one's hand.

At a first glance the ring seemed almost not to be worth studying, so mixed were its constituents and so indifferently was it made, but when the stones were examined individually it soon became apparent that the nine rock-types that could be recognized were distributed in a peculiar manner, and the lithological identity of every one of them—about 350—was determined.

Fortunately it happened that the rocks were of kinds that could be readily identified after macroscopic examination, for weathering had accentuated the differences between them, instead of, as is often the case, causing widely differing types of rock to acquire weathered crusts of closely similar appearance.

The most conspicuous stones were some large boulders, 33 in number, and varying from two to nearly six feet across, placed at irregular intervals around the ring. They consisted of fine quartzites, poorly cemented sandstones, and conglomeratic grits, all obviously derived from the same geological formation. They all had smooth well-worn surfaces, and proved to be glacially transported erratics derived either from the Old Red Sandstone or the Carboniferous Series. Owing to lack of facilities for field work since the excavation

⁶ Fox, *ibid.*, p. 141.

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was undertaken it has not been possible to determine which, although the available evidence points to the older formation as the parent rock.

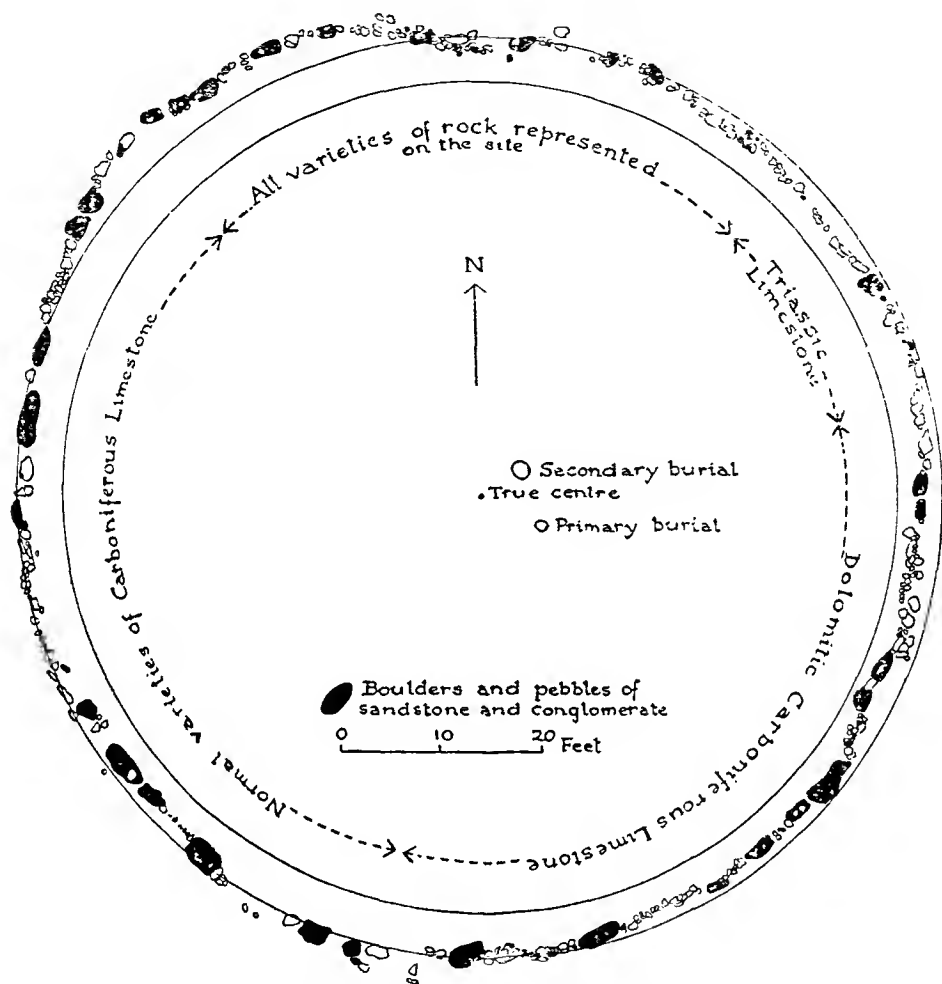


FIG. 2. PLAN OF THE STONE RING OF CRICK BARROW, MONMOUTHSHIRE, BASED UPON DRAWINGS MADE BY DR H. N. SAVORY, TO BE PUBLISHED IN *ARCHAEOLOGIA CAMBRENSIS*, 1940; WITH LINES TO SHOW THE RELATION OF THE STONES TO A TRUE CIRCLE AND INDICATIONS OF THE KINDS OF ROCK PREDOMINATING IN THE VARIOUS PARTS OF THE RING

Between these large boulders, which we may for convenience refer to as 'key' boulders, there were other stones of which the largest (very

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few in number) were about as large as the smallest of the key-boulders, although the majority were considerably smaller, and many were little larger than the 'hand-specimens' one would collect for a museum cabinet.

This series of stones, filling the gaps between the 'key' boulders, included grits and sandstones similar in nature and in origin to the rocks of those 'key' boulders, as well as some grey felspathic grits, but the majority were limestones of Carboniferous and Triassic age. The former included four recognizable varieties:—Oolitic limestone, coral-bearing limestone, thinly-bedded earthy limestone without fossils (all greyish in tint), and buff coloured crystalline dolomitic limestone, whilst the rock of Triassic age was a compact sparry limestone of pale pinkish tint.

The rocks themselves were of no particular interest, and the workmanship displayed in their incorporation into the ring was of a very low order, but their *distribution* was obviously significant. In the east-north-eastern sector of the ring the only rock represented (apart from three or four small pieces of sandstone) was the Triassic limestone, but passing round in a clockwise direction one found that in the eastern sector Triassic and Carboniferous (dolomitic) limestones were about equally abundant; in the southeast the dolomite predominated, with a few scattered blocks of Trias; in the southwestern and western sectors almost the whole of the rocks were the normal varieties of Carboniferous Limestone, although an occasional block of dolomite or Trias made its appearance; finally, in the northwestern and northern sectors, the stones between the 'key' boulders included representatives of all the kinds present in other parts of the ring—sandstones and grits like the 'key' boulders, as well as the various kinds of limestone and dolomite, placed indiscriminately both as regards type and size.

The significance of this serial distribution of the smaller stones—Triassic limestone, Carboniferous (dolomitic) Limestone, varieties of normal Carboniferous Limestone, and finally a heterogeneous assemblage—became at once apparent when the local field relations of the Carboniferous and Triassic rocks were taken into account.

A small rocky boss protruding through the superficial deposits a few yards eastwards of the site, and cut through during the construction of the new modern road, shows the relationship which exists between them. The Trias here rests unconformably upon an irregular surface of Carboniferous Limestone, and is essentially a shore or beach deposit formed by the destruction and re-deposition of the older rock at a time

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when the land was sinking after a long period of emergence and denudation. The uppermost layers of the Carboniferous Limestone are dolomitic, (i.e. consist of the carbonates of calcium and magnesium, instead of calcium only, as in normal limestone), so that the section shows, in descending sequence :—Triassic limestone, variable in thickness up to a maximum of six feet ; dolomitic limestone, variable in thickness up to a maximum of four feet ; oolitic and well-bedded normal limestones.

This relationship between the rocks as they naturally occur, taken in association with the distribution of the smaller stones in the ring, throws light upon the methods adopted by the builders of the cairn, while the 'key' boulders suggest a reason for their choice of site.

A scattering, over a comparatively small area, of large boulders of sandstone and conglomerate would seem to have been the prime factor in determining the choice of site, for the boulders would have been the most conspicuous features in a comparatively level area. There is no local development of 'boulder clay', for the superficial deposits underlying the soil near the cairn are either clay or fine sand entirely without large stones. The boulders would have lain on the surface, more or less completely exposed, and although we cannot here discuss the geological aspects of their origin, it is more than likely that floating ice (at a time when the general level of the land was lower than it is now) was the medium responsible for the last stage of their transport.

They would have been scattered over a limited area, and the first task would have been to gather them together and use them for defining the extent of the stone ring. Work would seem to have commenced at the end of the northeastern sector, and to have been carried on clockwise, but most of the really large stones had been used up by the time the builders had completed the northwestern sector, so that in the last part of the ring groups of smaller stones were used as 'key' boulders instead of single large ones.

There still remained a number of much smaller masses of sandstone, but they were quite insufficient to fill in the space between the 'key' boulders, and they seem, for the time, to have been disregarded, while attention was given to a nearby hillock where rock protruded from beneath the soil. The structural features of the exposed rock—the littoral Triassic limestone—were such that fairly large masses could easily be prised away from the surface, and, again beginning at the end of the northeastern sector and working clockwise, the excavated or quarried material was used to fill the gaps in the ring. In a short time the Triassic limestone of the hillock gave place to the Carboniferous

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(dolomitic) Limestone beneath, and while, for a time, both types of rock were carried away together, the dolomite was soon fully exposed, and it alone provided the smaller stones for about one third of the ring.

When the dolomite layers had been removed, the normal Carboniferous Limestone beneath supplied the material for the next third (southwestern and western sectors) of the ring, together with an occasional block of Trias or of dolomite, perhaps dislodged as it became necessary to enlarge the area of excavation.

When rather more than three-quarters of the ring had been filled in the supply of limestone seems to have run out, probably because the builders had quarried away the boss upon which they were working, or had reached the less weathered material that was more difficult to remove. To complete their work they used, indiscriminately, fragments of all the types of rock that they had previously used with greater selectivity. This sector includes a number of fragments of sandstone and grey grit similar to, but much smaller than, those represented in the 'key' boulders—further proof that the builders were hard up for material and had to scour the site for stones that they had previously ignored.

The suggestion that the preliminary laying out of the ring and the subsequent filling in were each commenced in the northeast, and that the work was carried out in a clockwise direction, arises naturally from the sequence of rock-types around the ring, and the assemblage of odd fragments in the sector where there was already a deficiency of 'key' boulders; also, as FIG. 2 illustrates, the line of stones approximates to a true circle in the northeastern and eastern regions, but departs markedly from such a figure as it is traced towards the northwest.

Comparing and contrasting the results of the geological investigation of these two cairns, we have, on the one hand, a picture of people familiar with the rocks of the district in which they lived, and sufficiently keen to look for the best spots in the locality for the stones they needed for their cairn. They chose their site with a view to securing a skyline position in relation to their homes, and brought to it rocks suitable for their purpose. Then, when additions were made, new kinds of rocks of distinctive type for special purposes were transported over distances ranging up to half a mile.

On the other hand, we have people content to make use of (or, it may have been, were reduced to the necessity of using) a group of large boulders which happened to lie upon the ground. The choice of site was dictated by the location of the boulders, but there were sufficient

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only to give an incomplete outline of a ring, and masses of rock easily dislodged from a nearby weathered outcrop were pressed into service ; the supply from this source was, however, insufficient to complete the packing of the spaces between the larger boulders, and for the last part of the ring the site was scoured for fragments that had been dropped or discarded during earlier stages in the work. There was not even stone to spare to line a cist, and no attempt was made to obtain further supplies from exposures that were no farther away from the site than the sources of supply drawn upon by the Simondston people were from the cairn at Coity.

The geological examination of these two Bronze Age burial-sites shows quite clearly that although the *identification* of the various types of stone in each of the cairns was an essential part of the investigation, the armchair identification of the chips, by some one who had not collected them, would not have led to the results outlined in these pages. To obtain such results, the mutual relation of the rock-types as they are distributed upon the site must be closely examined, *for the absence of any particular kind of rock from one part of the site may be of as much significance as its presence in another.*

In addition to general problems such as those already outlined, geology may also throw light upon matters of *detail* that arise during the course of excavation, and may encounter problems that have to be solved in the workroom. Two illustrations, both relating to the Simondston Cairn, will suffice.

Within the cist, and associated with one of the primary burials, was a small hemispherical cup about 45 mm. in diameter, but 'being a natural object, its importance was not recognized at the time'.⁷ Acting on the sound principle that all such objects, whether apparently important or not, should be preserved for further examination, the specimen was handed to me with various other 'finds' that I had not seen *in situ*.

It proved to be the weathered crust of a nodule of marcasite (sulphide of iron), which could only have been derived from the Chalk, the nearest outcrops of which are more than fifty miles away from Coity. It was certain that the object could only have come into the district and into the cist as a result of human intervention, for it was far too fragile to have survived transport by glacial or alluvial action, even if these could have been considered as likely agents, and the question arose, was it another instance of the collection of minerals and fossils by early

⁷ Fox, *ibid.*, p. 132.

A GEOLOGIST AMONGST THE CAIRNS

man, i.e. was it part of a nodule that had decomposed within the cist, or was it already a cup-like object of some special significance when it was placed near one of the urns ?

The 'cup' had been produced from an almost spherical nodule of marcasite in the following stages: the nodule was formed as a result of chemical action and the segregation of iron-bearing minerals within the chalk, and a crust of limonite (hydrated oxide of iron) was developed by oxidation of its surface layers; this crust was sufficiently durable for half of it at least to remain intact while the remainder of the marcasite fell away, or was destroyed by subsequent decomposition, after the nodule had been removed from the chalk by weathering or by excavation.

From the regular character of the interior of the specimen, and the absence of decomposition-products in the adjacent clay, it was apparent that the development of the cup-like character was completed before the object was buried in the cist. It may or may not be significant that, of the individuals represented by the bones in the urn in association with which the cup was found, one was a juvenile, 'still in possession of the deciduous or milk teeth'.⁸ The 'cup' may have been a treasured toy!

As was usual in such circumstances, a good deal of charcoal was found in association with the various burials in the cairn, but the discovery of some fragments of coal in the material associated with the secondary cremations provided a new problem, since there had been no previous record of coal being used for such a purpose in Wales. It was necessary first of all to ensure that the pieces of coal (in fragments up to about three-eighths of an inch cube) had not fallen in from above during the excavation, because it is by no means unusual for such fragments to occur in the soil in the southern part of Glamorgan, having been dropped from farm carts that at some time or other had been used for the transport of coal, either for lime-burning or for domestic use. Close examination, however, proved, in this case, that the coal did actually occur in association with burnt and comminuted bones, charcoal, and burnt clay, in a layer of dark-coloured material underlying one of the urns.

Even this was not necessarily evidence that coal had been used as well as charcoal, as a *fuel* in the cremation, for the fragments were of unburnt coal, and it was necessary to demonstrate the presence of coke or charred coal in the burnt debris. Careful search revealed a few minute pieces of coke, but most of the black material was too fine in grain to be picked out by hand, and the following means was

⁸ Fox, *ibid.*, p. 170.

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adopted to ascertain if this finely divided material included both charcoal and coke. It is an adaptation of a method used in petrographical research for the separation of minerals of varying specific gravities, and in the present case was based upon the knowledge that charcoal is relatively lighter than coke and both of them lighter than clay.

About half an ounce of the material from the dark layer beneath the urn was dried by exposure to the air and lightly pounded in a mortar ; this caused a considerable part of it to fall to powder, which was placed in a porcelain dish and well covered with benzine. The whole of the solid material, being heavier than the liquid, remained on the bottom of the dish.

Bromoform (a heavy liquid, nearly three times as heavy as water and freely miscible with benzine) was then poured drop by drop into the dish. A point was soon reached when the specific gravity of the liquid became such that the lightest material (small black particles) in the solid mixture began to float. At first it came up in some abundance, and then, with the addition of more bromoform, more slowly. At this stage, the floating material was carefully scraped together, washed with benzine on a filter paper supported in a funnel, and carefully dried. More bromoform was then added and further material (also black) began to float up, until at last all the carbonaceous matter had been separated from the clay, which remained at the bottom of the dish. This second batch of black material, which was of slightly higher specific gravity than the first, was also skimmed off, washed, and dried.

Some material from each batch was then mounted for examination under the microscope and compared with the débris of visible charcoal and coke fragments that had been picked from the clay with tweezers, crushed, and similarly mounted. It was then seen that the first material to float had the fibrous texture of charcoal, while the second had the vesicular texture of coke. In this way what seemed to be an attractive possibility became an instructive certainty.

These examples are, I think, sufficient to indicate the possibilities of geological co-operation in archaeological work, and although Bronze Age Cairns were chosen to provide the illustrations, the same principles may be applied in the case of other kinds of excavation, and there are many other laboratory methods that can be (and have been) pressed into service, to supplement the results of the field work. But the work must begin in the field, for, as Polybius said in the second century B.C., ' the eyes are altogether more accurate witnesses than the ears '.

Old English Dead-fall Traps

by JAMES HORNELL

AN immense amount of effort has been lavished by ethnologists upon studies of the customs and appliances of wild tribes in far-away lands, whereas by comparison those of their own grand-fathers have been woefully neglected save by the few enthusiastic individuals interested in so-called 'bygones'. Fortunately the tide has turned at the eleventh hour and numerous local museums have now realized the urgent need to save a record of articles recently discarded from use in the everyday life of town and countryside. Under the name of 'Folk Museums' a considerable number devote the whole of their space to the exhibition of collections illustrative of local life in the times immediately preceding the day of the existing generation. Such collections properly planned should be in continuous growth; the things in ordinary use in the homes of today will be the bygones of tomorrow; if continued without break these collections would become the authentic and wholly trustworthy record of the everyday habits of the mass of our people, beginning roughly with the opening years of the nineteenth century, thence progressing 'Cavalcade-fashion' through the changing life of the generations following. Unfortunately the great majority appear to aim at the formation of a collection limited to the artifacts of a period that begins vaguely towards the end of the eighteenth century and ends still more vaguely sometime before the time of the present generation. Instead of being 'Folk Museums' they are really 'Period Museums'.

One subject of record should be, and often is, that concerned with the abandoned methods, many of them exceedingly ingenious and employed till recently to trap and snare vermin, birds and fishes. Foremost among these were certain dead-fall traps used to catch rats and mice. The present note is an endeavour to trace the source of their origin and to study the variations found within one outstanding group of these traps, and their peculiar regional distribution in the British Isles.

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With one exception no specific name seems to have survived for this kind of trap ; in the districts where it was formerly in common use, it was just an ordinary ' rat-trap '. The one exception occurs in Cambridge where I am told that it was generally known as the ' Norfolk rat-trap ', the idea being that its use had originated in Norfolk, spreading thence to Cambridge.

It belongs to the dead-fall class ; the principle involved is the vertical fall of a heavy weight intended to crush and kill the incautious victim. I propose to term it the ' vertical dead-fall trap '.

Before it was superseded by poison, ' virus ' and the cruel spring jaw-trap, its use ranged over a wide area covering the greater part of England. Although the main feature of the device was the same everywhere, early in the investigation it became clear that there were two distinct types with a few minor variations in each ; these may either be local or, as is more usual, the result of the personal fancy of the individual maker.

The two types may be termed respectively the lever-arm type and the string-release type. The former is much the more common ; generally it is of larger and heavier construction than the string-release type which, because of its small size, is definitely intended to destroy smaller animals than the larger type—the smaller is intended particularly for mice, the larger for rats.

LEVER-ARM TRAPS (FIGS. 1-4) are much more frequently found in collections than the string-release ones ; we are, I consider, justified in believing that the former represent the older and original type. In the usual and typical form the lever-arm trap consists essentially of a trough-like base, the ' box ' (*a*) open at the ends, a scaffold or gallows of two uprights, the guides (*b*), connected above by a cross-bar (*c*), of a massive rectangular wooden block (*d*) running on the guides which pass through holes bored vertically through it. It is further steadied by a centrally placed vertical pillar (*e*) having its foot let into the block, while its upper end passes through an aperture at mid-length in the cross-bar of the scaffold. The operating mechanism is made up of several moving parts ; these are the treadle (*f*), a piece of wood shaped like a short-handled spatula and not unlike a ' butter-hand ', placed across the floor of the basal trough ; (*g*) the lever-arm, a narrow wooden blade pivoted at the base of a long open slot cut in the upper end of the fall-block pillar (*e*) and a length of string tied at one end to the free end of the fall-lever and at the other to a trip-toggle—a flat piece of wood about two inches long by $\frac{3}{4}$ of an inch wide, cut to a chisel edge

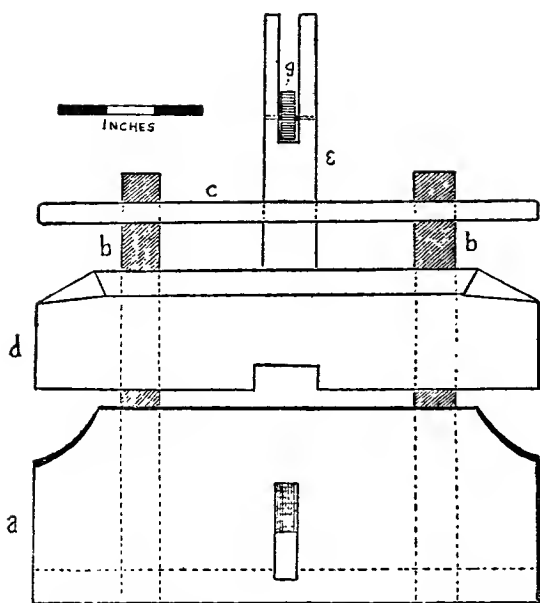


FIG. A. VIEW FROM THE FRONT OF A RAT-TRAP FROM UGTHORPE, NEAR WHITBY

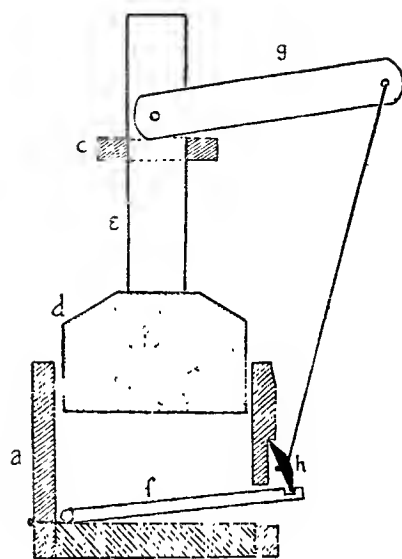


FIG. B. TRANSVERSE SECTION AT MID-LENGTH OF THE SAME TRAP TO SHOW THE WORKING OF THE TRIP MECHANISM

(a) basal 'box', open at the ends; (b) guide uprights of the scaffold, on which the fall-block (d) slides up and down; (c) crossbar of the scaffold; through it passes the central pillar (e), in which the lever-arm (g) is pivotted within an apical slot; (h) the trip-toggle

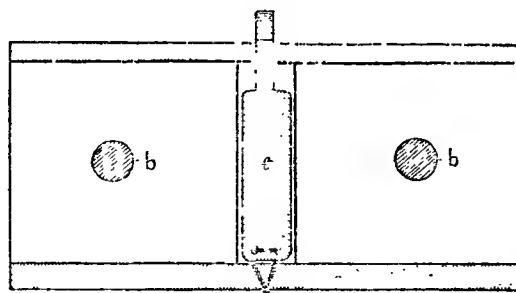


FIG. C. DIAGRAMMATIC PLAN OF THE BASAL PART OF THE SAME TRAP

b, b, the lower ends of the guide uprights inserted into the base board of the box; f, the treadle, hinged at the inner end by means of a loop of cord; at the other end is a notch to engage the lower edge of the trip-toggle

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at each end. The broad end of the treadle is hinged by a strip of leather or by a loop of cord at the back of the basal box ; its short narrow ' handle ' is passed through a rectangular opening, about two inches high by three-quarters of an inch wide cut half way along in the front wall of the box ; near its free end a shallow notch is cut on the upper side. In rare cases the slot is open above, extending to the upper edge of the front wall of the box.

To set the trap, the length of the trip-string is adjusted, the fall-block is raised to the cross-bar of the scaffold and held there by the left hand, while with the right one end of the trip-toggle is fitted in the notch at the outer end of the treadle handle, the other being lightly caught against the edge of the upper lip of the treadle-handle aperture. To bait the trap, food is laid upon the blade of the treadle within the box.

In photographs of traps (FIGS. 6 and 7) from Sweden, the basal part is made from a solid block of wood in which a rather shallow rectangular cavity is hewn in the upper surface. This gives a low-sided ' box ' having ends as well as sides, whereas in England preference is for deep sides and open ends. The explanation of the peculiar form favoured in England as given by an old and experienced rat-catcher is that no rat will enter this kind of trap unless it has a clear and unobstructed view right through from end to end ; it wants to be assured of an open road out. Mice appear to be less suspicious for, as we shall see, the box in mouse-traps of this type has closed ends as in the continental rat-trap design.

One of the most notable deviations from the standard English pattern, is, curiously enough, seen in the solitary example known from Wales. In this unique trap (FIGS. 2, 3) which hails from Llandeilo Fawr in the west of Carmarthenshire and is now in the Carmarthenshire Museum, the pillar carrying the lever-arm is implanted in the fall-block slightly behind the central point and thereby becomes a trifle eccentric in position. So, instead of passing through a median hole in the scaffold cross-bar, it rakes slightly forward, pressing against the hinder edge of the bar over which the lever-arm rests horizontally when the trap is set. The cross-bar itself is curved concavely on the hinder side in order to facilitate the use of this unusual form of fall-block pillar.

The STRING-RELEASE TRAP (FIGS. 5, 7) dispenses with the central pillar and its lever-arm. Instead, the free end of the trip-string is passed through a hole bored at mid-length through the scaffold cross-bar, and made fast to a staple or bent nail fixed at the centre of the top

OLD ENGLISH DEAD-FALL TRAPS

of the fall-block. By hauling on the trip-string the fall-block is drawn up against the cross-bar and there held suspended when the trip-toggle is fitted lightly between the treadle-arm notch and the upper edge of the treadle slot, or in a slight nick in the wood above the slot or (rarely) against the lower edge of the fall-block as in the circular Surrey examples (FIG. 5). When a mouse, scenting the bait, jumps upon the treadle within the box its weight depresses the treadle arm which acts as a trigger, setting the mechanism in motion by releasing the trip-toggle. This in turn destroys the equilibrium of the suspension, causing the block to fall with a crash upon the intruder. This mechanism is essentially the same as that employed in working the French guillotine where, however, a weighted knife sliding between the uprights of the scaffold takes the place of a heavy wooden block.

The 'box' in the string-release trap is either of the Scandinavian type or it has four low sides formed by an all-round beading (FIG. 4). The usual size of the box is 4 ins. by 4 ins. ; it is not unusual to find two twin units combined upon a common base and sharing the same scaffold or gallows but otherwise independent, with separate guides, treadles and trip mechanism.

A few examples are of superior workmanship and finish, evidently made to the order of well-to-do patrons. Two Surrey traps (Worthing Museum), a large one for rats and a small one for mice (FIG. 5), have turned bases and cylindrical fall-blocks worked by string release in each case. In another instance (Leicester Museum) the fall-block runs on two unusually slender guides, so weak that the cross-bar of the scaffold has to be supported by a pillar at each end, rising from the square basal block outside of the circular cavity into which in this example the fall-block descends when the trap is sprung.

Until recently the only published notice of this curious trap was that by Gertrude Jekyll. In her *Old West Surrey* (1904) she gives sketchy text-figures of both the types without any detailed description other than that 'these home-made mouse-traps were in general use'. In 1937, consequent upon a notice in the *Field* calling attention to a new and admirable form of humane rat-trap recently 'invented', Mr A. R. Pertwee of South Zeal in north Devon, wrote to the Editor to point out that the principle of the so-called 'invention' was nothing new, being similar to that of a contrivance in his possession considered to be 200 years old. He has since informed me that he knows of another example at Hatherleigh, also in north Devon.

Mr Pertwee's trap is of special interest for it is the only instance

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of the lever-arm type in which the guide rods do not run through vertical holes bored through the fall-block ; instead, they are replaced by upright pillars united above by a cross-bar. This scaffold straddles the 'box' obliquely, as the uprights are staggered to allow the outer end of the lever-arm to be directly over the toggle-catch when the trap is set ; one pillar is nailed to the front of the box four inches from one end, the other to the back, eight inches from the same end.

The result of widespread enquiries throughout the British Isles is the conclusion that the vertical dead-fall trap, in one or other of its two types or in both, was widely distributed throughout much the greater part of England until some seventy years ago ; the majority of the records come from northern, eastern and southeastern England, with extension into the Midlands up to the Welsh Marches. To particularize :—examples are known from every county except the following—Northumberland, Durham, Cheshire, Derby, Nottingham, Stafford, Rutland, Huntingdon, Northampton, Bedford, Oxford, Berks., Hampshire, Dorset, Somerset and Cornwall, nor is it found in Hereford and Monmouth. In view of the lack of interest in bygoness so surprisingly common in many localities, coupled with the fact that many of the counties furnishing no records are surrounded by areas where the dead-fall trap is represented, it becomes morally certain that the distribution once included several of the counties returning no records. This inference applies particularly to Rutland, Huntingdon, Northampton, Bedford, Oxford and Berkshire. I fully expect to hear later that this trap has been in use in Northumberland and Durham, seeing that it is well authenticated for Cumberland, Westmorland, and Yorkshire.

Apart from the solitary record from southwest Wales already mentioned no suggestion of its use among the purely Celtic-speaking population of the Principality has been made. No other example is to be found in any Welsh Museum. Even at the National Museum, where enthusiasm for the collection of Welsh bygoness is extremely lively, nothing had ever been heard or seen of this form of trap before my enquiry. Nor is it known in or from Cornwall, where Celtic speech has not long been extinct.

In Scotland, testimony to the former use of the dead-fall trap comes from Dumfries, where one informant states that he used this type some 50 years ago. From Midlothian, an officer in the Sanitary Department remembers its use in the neighbourhood of Edinburgh in pre-war days (say during the first decade of this century). Lastly, I

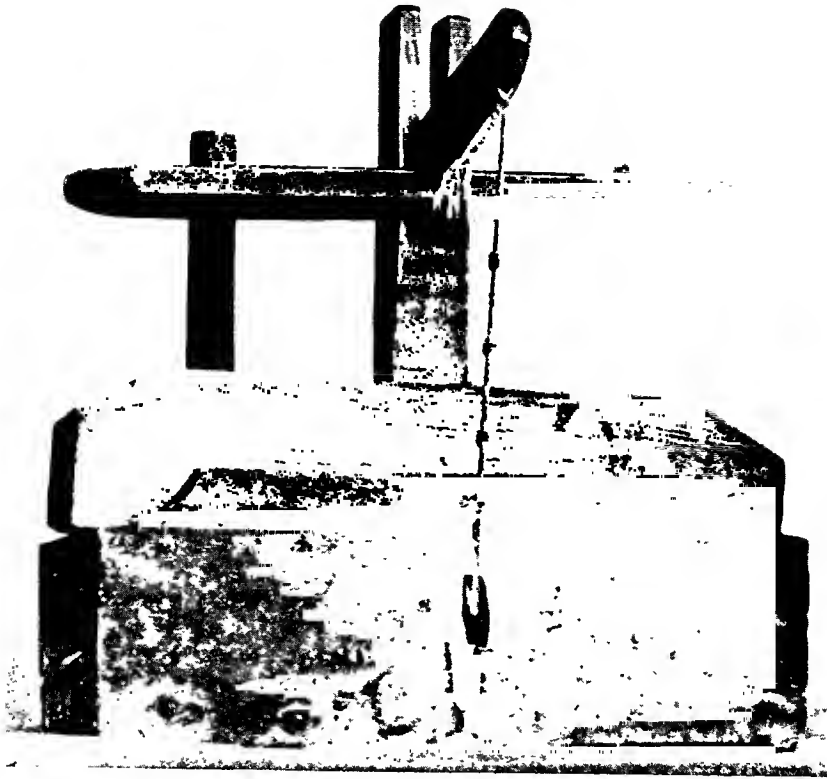


FIG. 1. A RAT TRAP FROM WHITBY (see p. 397)
Ph. J. Hornell

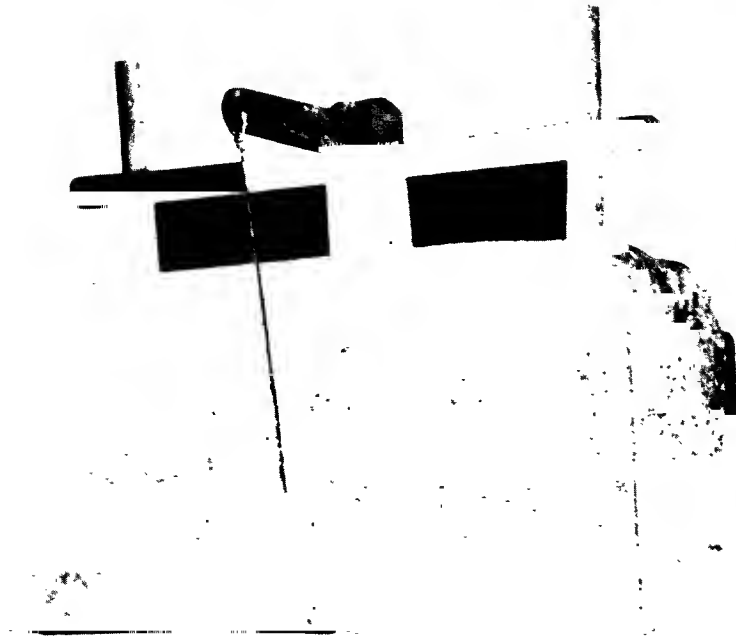


FIG. 2. THE CARMARTHEN RAT TRAP (see p. 398).
An unusual form of lever-arm trap from Llundula Lawr. The tall block pillar is placed
eccentric to the scaffold cross-bar.
Ph. J. Hornell

PLATE II

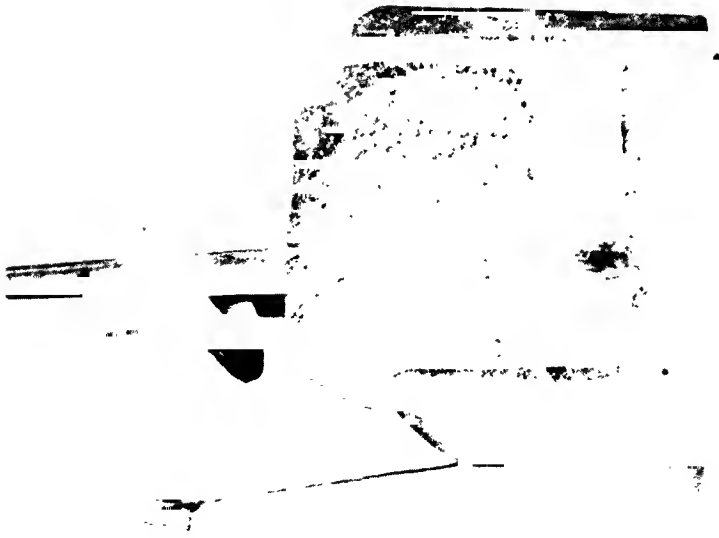


FIG. 3. THE CARWARTHIN DEADFALL TRAP, INDIVIDUAL VIEW (see p. 368)
 Showing the open end and one of the guide-rods, passing through the
 tall block to insertion in the first board. The trap string is too long
 to set the block at its proper working height.
 Pl. 3. Home II



FIG. 4. A FINNISH RAVEN TRAP, NATIONAL MUSEUM OF FINLAND
 (see pp. 396, 402)
 By contrast, the National Museum, Finland and Pl. 6. Larchmont

PLATE III

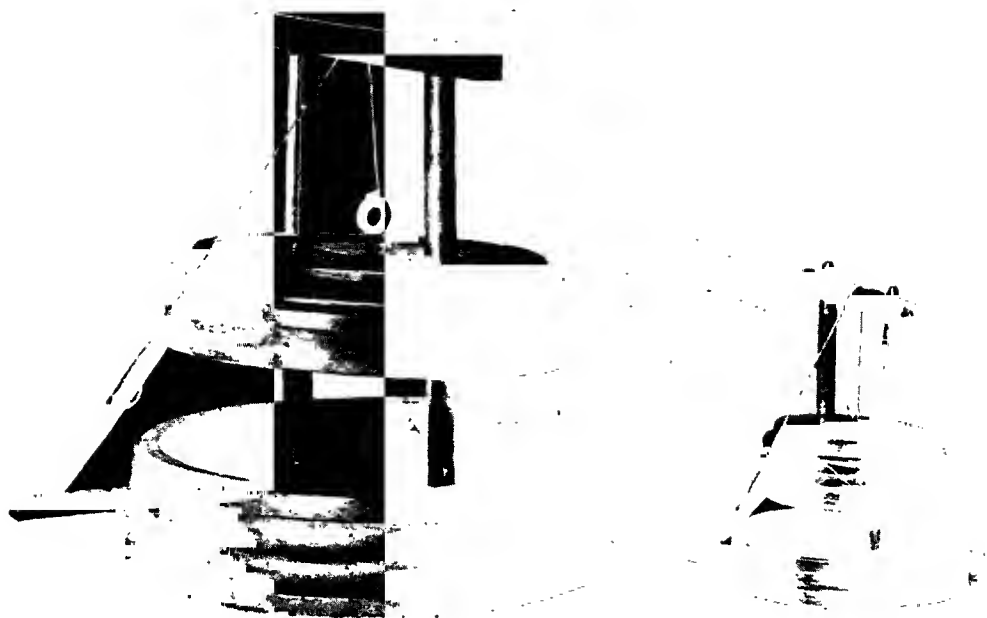


FIG. 5. SURRELY TRAPS FOR RATS AND MICE. WORTHING MUSEUM (see pp. 308, 309).
The turned bases and blocks are exceptional. The usual form has a square base and a heavy cubical block.
Frequently two units are combined, as in Fig. 7.

PLATE IV



FIG. 6. RAT TRAP FROM NAS IN DALLCARLIA, SWEDEN
(see p. 398)

In both figures 5 and 6 the block slides between the guides, whereas in the equivalent British form the guides pass through holes bored vertically through the block.

By courtesy of Dr Gosta Berg

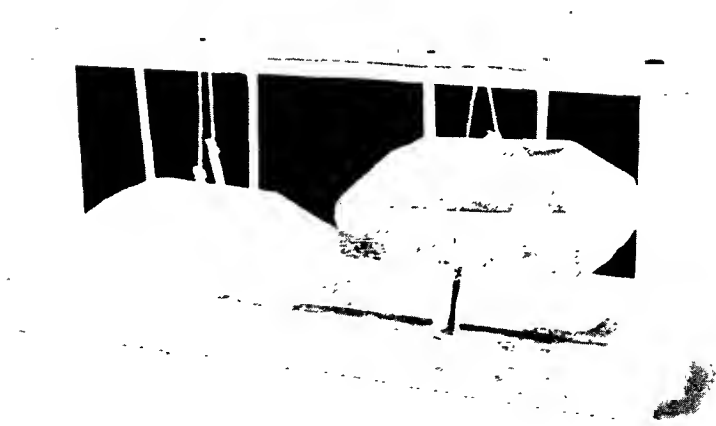


FIG. 7. RAT TRAP FROM ORSA PARISH, DALLCARLIA, SWEDEN
(see pp. 398, 402)

By courtesy of Dr Gosta Berg

OLD ENGLISH DEAD-FALL TRAPS

have information that a miller in the island of Hoy, Orkney Islands, was using this kind of trap up to six years ago.

Prolonged correspondence with the staffs of museums in northern Ireland and Eire and with Irish antiquaries interested in the recent past, has been barren of result ; the conclusion is definite that traps of this design have never been in use in Ireland.

From the records of distribution given above it becomes clear that the regional range of the vertical dead-fall trap coincides closely with those areas where Anglo-Saxon and Danish populations have displaced or absorbed the Celtic-speaking Britons. This is emphasized by the negative evidence from Cornwall, Wales, Ireland, and the Celtic-speaking regions of Scotland. It is true that one example is known from Wales and three records come from Scotland ; if we analyze these we find that the Welsh record is from a district adjoining Pembrokeshire, which suggests that its introduction may have been effected through the medium of Flemish and English settlers, whose descendants to this day exhibit a preference for English customs and the English language—in former days their settlements went by the name of ' Little England beyond Wales '.

As to Scotland the two mainland records occur in Lowland counties predominantly Saxon in population ; both are noted for the advanced agricultural ability of their farmers and peasantry. As to the Orkneys, the Scandinavian origin of the population need not be stressed.

In most districts in Britain the dead-fall trap passed out of use at varying periods during the nineteenth century. When an estimate of the date of its disappearance is given, I fear that the answer too frequently is in the nature of a guess—usually ' about 50 years ago ' or ' about the middle of last century ' is the reply. Evidently there was great variation in the approximate date of disuse. In most localities this appears to have occurred within a few decades on either side of 1850. Among the recent dates are about 1913 for Midlothian ; the same year for Norfolk (Dr L. W. G. Malcolm, Horniman Museum), and up to 1934 in the Orkneys, where it may still be in use. In one place alone have I positive evidence of its continued existence and use. This isolated survival is to be found in Cambridge, where a baker, Mr Frank Webster, finds this kind of trap invaluable in keeping his shop and bakehouse clear of vermin. He has three traps in use ; all are of the string-release type. Two are small with bases about 4 ins. by 4 ins. ; one is an old one made by Mr Webster's father about 1869, the other is a modern copy, home-made. The third example is of larger size,

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intended for rats ; this too was made by Mr Webster in recent years, with the addition to the fall-block of a sheet of lead nailed to its upper surface to increase the crash-weight. Mr Webster maintains stoutly that these are the most effective of all traps for ridding a house of rats and mice.

Apart from the interest inherent in a mechanical contrivance so admirably adapted to the purpose in view, study of the regional distribution of these traps in Britain becomes of particular importance when we consider the range of distribution of corresponding traps of the same basic design upon the Continent. Dr Gösta Berg* who has written on these and other forms of traps kindly sent me photographs of two fall-traps from the province of Dalecarlia in south Sweden. One of these (FIG. 7), from the parish of Orsa, is of a double or twin-block example of the ordinary British trap of string-release type, but with the fall-blocks oblong in shape instead of being square. The other, from the parish of Näs (FIG. 6) is of a type so exceedingly rare in Britain that only a single instance is known and even this, a twin-block mouse-trap from Warwickshire in the Cheltenham Museum, differs in detail. In this Swedish trap, which belongs to the lever-arm type, the fall-block, instead of running on two guide rods passing vertically through its mass, slides up and down on two lateral squared pillars which fit in rectangular grooves cut in the ends of the block. The two pillars are connected above by a cross-bar through which passes the lever-arm support, inserted below at the centre of the fall-block.

Berg (*loc. cit.*), in a footnote gives references to records of the vertical dead-fall trap from Switzerland, Germany, Latvia, Hungary, Serbia and Macedonia. Dr S. Lagercrantz has also sent me a photograph of a trap (FIG. 4) from south Finland identical with the lever-arm trap from Sweden. It is or was common in south Finland and a record from Poland is mentioned by Dr Lagercrantz. He informs me that while this trap is very common in the northern and western parts of Hungary, it is scarce in the central region. In many places it has become obsolete as in England, but here and there it is still in use.

A copy made in iron is one of the modern minor products of industrialized Germany according to Dr Lagercrantz (in letter).

So far as we know the block-fall trap is not used in any of the so-called Latin countries—France, Spain, Portugal and Italy ; neither is it known in Asia, Africa or America.

* ' Nordskandinaviskt-nordeuropeiskt etnologiskt varjehanda ', *Rig*, III, 1933, pp. 118-39.

OLD ENGLISH DEAD-FALL TRAPS

With the above knowledge of the Continental range of this trap, incomplete as it confessedly is, we shall now be able to see what significance attaches to its distribution in Britain. When the records of its occurrence are plotted on a map of England, these are found to spread fan-wise from the coast of East Anglia—the obvious arrival locality for an artifact coming from the southern coast of the North Sea. If this be granted, and if we couple with it the fact of the settlement of Flemings on an extensive scale in Norfolk and the adjacent counties in the twelfth century, and of a smaller but quite important settlement of the same people about the same time in Pembrokeshire (a locality close to the provenance of the solitary example recorded from Wales), the probability is considerable that this form of trap was introduced into England from the Low Countries in middle medieval times. Any earlier date is improbable.

The general conclusion at which we now arrive seems to be that the English dead-fall rat-trap is derived from an old and widely spread Central European culture extending from the Rhine on the west to the Russo-Polish marshes on the east, and from the Baltic on the north to the Alps and the Balkans on the south. But, like so many customs and appliances that have reached our shores from the Continent, the genius of Britain has wrought such modifications in the design most widely spread, as to impart to it a characteristic individuality wholly its own.

Archaeology in the Soviet Union

by HENRY FIELD AND EUGENE PROSTOV

THE following archaeological notes¹ were received at Field Museum of Natural History, Chicago, from the Society for the Promotion of Cultural Relations with Foreign Countries (VOKS) in Moscow.

The excavations were conducted under the auspices of the Institute for the History of Material Culture (IIMK) in Leningrad in cooperation with local archaeological societies or museums.

This report supplements recent articles² on archaeological research in the Soviet Union. It must be stated that some sections of the reports received by us from the U.S.S.R. often overlap material which we have already published.³ The reports, however, are written by different investigators, and usually contain new, sometimes conflicting, data. It has therefore been our policy to publish whatever descriptions or archaeological investigations are received, eliminating only the obviously repetitious details. As our reports carry regional headings, it is a simple matter for the reader to compare the various versions of an investigation.

The material treated here has been arranged under the following geographical headings:—Karelian-Finnish S.S.R., European Russia, Crimea, Georgia, Central Asia (Uzbekistan and Kirghizia), and the Ural and Altai areas.

¹ The greater part of the information was translated and summarized by Eugene Prostov from *Kratkie Soobshcheniia o dokladakh i polevykh issledovaniiaakh Instituta Istorii Material'noi Kul'tury*. [Brief Communications on Reports and Field Investigations of the Institute for the History of Material Culture] (IIMK) Nos. 3-4, Leningrad, 1940. Under Prostov's supervision the Congressional Library System of transliteration has been used, with minor modifications, for all proper nouns in Russian.

² See A. M. Tallgren and others in *Eurasia Septentrionalis Antiqua* (ESA) since 1926; also E. Golomshtok, 'Anthropological Activities in Soviet Russia', *American Anthropologist*, n.s. XXXV, 301-27, 1933; and A. Zolotarev, 'The Ancient Culture of North Asia', *ibid.* XL, 13-23, 1938.

³ See H. Field and E. Prostov, in the following articles: *American Anthropologist*, n.s. XXXVIII, 260-90, 1936; XXXIX, 457-90, 1937; XL, 653-79, 1938; and XLII, 211-35, 1940. *American Journal of Archaeology*, XLI, 618-20, 1937; XLII, 146-7, 295-8, 1938; XLIII, 331-2, 507, 1939; XLIV, 138, 1940. *American Journal of Semitic Languages and Literatures*, LII, 138-41, 1936; LIII, 123-4, 275-6, 1937; LV, 109-12, 333-6, 1938; LVI, 110-2, 172-4, 322-4, 438-40, 1939; LVII, 112, 194-6, 327-9, 1940. *Ars Islamic*, V, 233-71, 1938; VI, 158-66, 1939. *Asia*, XL, 272-7, 327-30, 1940. *Antiquity*, XII, 341-5, 1938; and XIII, 99-101, 1939.

ARCHAEOLOGY IN THE SOVIET UNION

KARELIAN-FINNISH S.S.R.⁴

G. Gurina, of the Marr Institute of the History of Material Culture, conducted excavations in the district of Povenets on Lake Onega. During the search for Neolithic camp-sites on the Orov-Navolok Peninsula she located a settlement in which a bronze foundry and many bronze articles were unearthed. Other finds included superb pottery made from clay containing an admixture of asbestos.

Excavations along the Vuoksi River, on the northern coast of Lake Ladoga, and near the cities of Viipuri and Kakisalmi will begin shortly.

EUROPEAN RUSSIA

1. G. A. Krivtsova-Grakova⁵ published the results of the excavations which were conducted in 1929 under the auspices of the State Historical Museum in an extensive cemetery at Gorki in the Ykovlev *Raion*, Ivanovskaia *Oblast* and 250 kilometres northeast of Moscow. During two years of excavation 880 square metres were uncovered. Nineteen graves dug into the surface of a large hill, a part of which is occupied by Gorki, were ovoid or funnel-shaped. Except for a dorsal burial oriented to the west, with widespread flexed legs, and probably flexed elbows, human skeletons and bone objects were so disintegrated as to be unidentifiable.

Pottery objects of Fat'ianovo type predominated. The clay frequently included an admixture of coarse sand or mica. This hand-made pottery was made of strips 2.5 to 7.5 centimetres in width, coiled from a cup-shaped, rounded base. Large spherical, highly smoothed, medium-fired pots, generally with straight necks, were ornamented on the neck and shoulders by means of a small stamp which produced diamonds, squares, zigzags, and rows of straight or slanting lines. One vessel was stamped with two appliqué belts.

The burials also yielded a perforated stone axe, two polished wedge-shaped flint hatchets and a copper axe. In one tomb the excavators found a toy axe, 8.7 centimetres in length and made of well-fired, polished clay. This perforated type of stone axe is familiar in the Fat'ianovo culture. In another tomb was a clay toy spoon, 7.5 centimetres in length.

⁴ Excerpted from Moscow *Daily News*, 15 August 1940.

⁵ *Gorkinskii mogilnik* [The Burial Ground at Gorki] ' *Sbornik Statei po Arkheologii SSSR* ', *Trudy Gosudarstvennogo Istoricheskogo Muzeia*, VIII, pp. 57-72, Moscow, 1938.

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On the basis of the recent discoveries of Fat'ianovo sites, Krivtsova-Grakova classified them into groups and attempted to elucidate the relation of the Fat'ianovo culture to the distribution of the 'pit and comb' ware. In the Moscow area she discerned two main variants of the Fat'ianovo culture, the 'Moscow' and the 'Yroslav' groups. In addition a third 'Eastern' group is represented by the Atli-Kasy cemetery described by P. N. Tret'iakov in 1931; and a fourth, the 'Southern' group near Briansk.

The 'Moscow' variant, which includes triangular notched flint arrowheads, arrow-straighteners and cord-ornamented, elongated pottery, is probably contemporaneous with the 'Catacomb' and the 'Dnieper' cultures of southern Russia, which are attributed to the third millennium B.C. This includes the burials at Sushchevo, Istrinsk, Davydkino, Kuz'mino, and on Ivanovo Mountain.

The Yroslav group, showing highly advanced forms of spherical pottery decorated with stamp ornament and relatively highly developed metallurgy, probably belongs to the second millennium before our era. This group includes the burials at Fat'ianovo, Goviadinovo, Gorki and Vaulovo.

On the theory that the Seimino burials, included pottery reminiscent of various types of Fat'ianovo ware, belong to the same culture, it is possible to suppose that in the Volga-Oka basin a variant of the Fat'ianovo culture lasted down to the end of the second millennium B.C. This group is definitely contemporaneous with the 'pit and comb' pottery culture.

2. M. E. Foss⁶ described the Neolithic burials from Kubenino near Kargopol. Of particular interest were three interments lying in the clay beneath the main cultural stratum. All three burials were prone with extended legs and slightly bent arms; two were oriented to the south, one to the north. The skulls had probably been shattered at the time of burial. The skeletons were near the hearth in shallow tombs of irregular outline. The first of the graves, which had been covered originally with a pile of stones, did not yield any objects.

The second burial included a bone anthropomorphic but hoofed figurine, which was buried face down at the left of the pelvic bones of the skeleton, two bone pendants, three bone awls, and a fragment of bone carving of a hoofed leg.

⁶ M. E. Foss, 'Pogrebeniia na stoianke Kubenino' [Burials at Kubenino] *Sbornik Statei po arkheologii SSSR, Trudy Gosudarstvennogo istoricheskogo muzeia*, VIII, pp. 73-91, Moscow, 1938.

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The bottom of the third grave was covered with dark red ochre mixed with ashes and coals. The bones were well-preserved and completely permeated with ochre. This burial was accompanied by a greater number of objects. To the left of the skull was a fragment of a flint spearhead, pointing to the skeleton's temple. Another fragment of this spearhead was under the skull. Near the right temple was found a stylus-shaped bone arrowhead. Five bone pendants, forming a necklace, were found near the neck. One of the beads apparently depicted a swan's head; another was elongated and terminated in a hoof (?); the third resembled an awl; the fourth was a styloid bone of elk, worked at the end; and the fifth was an unworked bird bone. Under the pelvis were found twenty-nine buckles of beaver incisors, and mandibular fragments of otter and marten serving as pendants. A horn knife or awl handle was found beside the belt. To the right of the pelvis lay a large bone chisel and an armless and legless human figurine of horn. A laminated bone pendant fragment with carved ornament was found close to the left femur. Near the right forearm were found an arrowhead, a flint scraper, and a badly-worn flint, probably used in making fire. Another arrowhead lay near the pelvic girdle. A large split tubular bone, probably of bear, and a bear claw were found near the left tibia.

3. According to Tret'iakov,⁷ who attempted to identify the early eastern Slavic archaeological monuments with the Slavic tribes mentioned by Nestor's Chronicle, the most important period was that of the first half of the first millennium A.D. The monuments attributed to the beginning of the second millennium, which have heretofore been used extensively in the study of the tribal archaeology of eastern Slavic tribes, are no longer deemed to be valid for the study of the ethnogeography of these ancient tribes.

The archaeological monuments of the second half of the first millennium A.D. formed several distinct groups. The most northerly of these groups, which stand near Lake Ilmen, is characterized by the so-called 'Novgorod sopki', high tumuli containing multiple incinerated burials. The oldest of these tumuli are attributed to the sixth or seventh century, the latest to the ninth or tenth century A.D. In the later periods these *Novgorod sopki* are replaced by the ordinary low kurgans, containing single or double, incinerated burials.

⁷ P. N. Tret'iakov, 'Archaeological monuments of eastern Slavic peoples in connection with the problems of ethnogenesis' in *Kratkie Soobshcheniia*, IIMK, II, pp. 3-5, 1939.

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The second of the groups occupied the upper course of the Dnieper, western Dvina, and the Volga, as well as the southern part of the Valdai highlands, and formed a wedge to the north along the eastern shore of Chudskoe Lake. This area is characterized by the so-called long kurgans containing collective incinerated burials. The oldest of these long barrows are attributed to the fifth or sixth century A.D. During the ninth or tenth century they were gradually replaced by individual round tumuli.

The third group is represented by the burial structures in the area along the upper course of the Oka River, extending as far as the upper reaches of the Don. These tumuli, attributed to the period from the sixth to the tenth centuries, contained structures resembling wooden log-cabins, which enclosed the remains of incinerated burials.

Distinctions other than those of mortuary customs differentiated the three groups. The third or Oka group was characterized by *gorodishches* and by sites of the so-called Moshchin type.

The three groups belonged to the Slaveni, Krivichi, and Viaticchi peoples of the old Russian Chronicles, together with the Lithuanian-Baltic tribes and those of the western Volga. The last two groups differed sharply from those of the Slavic peoples. On the basis of the more detailed chronological subdivision of the monuments, Tret'iakov found that during the period from the seventh to the tenth century the Slavs continued to penetrate northward from Lake Ilmen in the direction of Lake Beloe down the Volga into what are now the Rostov and Suzdal areas, and through the upper reaches of the Don probably into the middle Oka region.

Two other local groups of Slavic monuments divided by the Dnieper were found further south in the Desna and Sejm basins. The first group was formed by the so-called Romny ('Romenskii') type of *gorodishche* containing incinerated urn burials; the second group by the southern White Russian *gorodishches*. Still further south, in the Ukraine, the middle Dnieper 'urn-burial fields' are considered to be Slavic, together with the accompanying unfortified settlements (*selishches*) and *gorodishches*. These monuments belong to a period from the beginning of the first millennium to the sixth or seventh century, when they are replaced in turn by groups of tumuli and other Slavic monuments of the end of the first millennium A.D. Having for their eastern boundary the region of Kharkov, most of these monuments are located on the shores of the Dnieper between Kiev and Dnepropetrovsk, and in the region of the right bank, progressing in a broad belt

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westward toward Central Europe. The genetical connexion between the urn-burial culture and that of the Scytho-Sarmatian period of the Dnieper was first indicated at the end of the nineteenth century. In the west this culture is connected with the so-called Luzhitsa culture of the Bronze Age and the Early Iron Age.

A comparative study of the cultures of the southern and northern Slavic tribes of the eastern group indicates no genetic connexion. The culture of the southern tribes developed under a certain influence of ancient Mediterranean civilization. At the beginning of the present era it had the character of a Roman provincial culture. On the other hand the culture of the northern tribes down to the end of the first millennium A.D. was distinguished by a greater primitiveness. At the same time data are available pointing to the deep local roots of the cultures of all the northern tribes.

Judging by the archaeological finds the formation of the eastern Slavs as a unity belongs to the second half of the first millennium A.D. At that period their primitive social order was dying. The growing economic and political connexions were breaking through the boundaries of the old tribal formations. A very strong role in the consolidation of the eastern Slavs was apparently played by the movement of the barbarian tribes dwelling to the north of the Eastern Roman Empire, which was terminated in the seventh or eighth centuries by the Slavic invasions of the Balkan Peninsula. The southward movement of the Slavic tribes also continued during the Khazar period. In the east it was terminated when the Slavs settled on the lower Don and on the Taman.

4. According to I. I. Liapushkin,⁸ after an interruption of three years the Sarkel Expedition of the Institute for the History of Material Culture (IIMK) was resumed during 1939 on the right bank of the Don river, eight kilometres below the Cossack settlement at Tsymlianskaia. The *gorodishche* was located on the seventy-metre terrace, formed by the delta of two ravines opening into the river. This highly fortified *gorodishche*, commanding the important waterway connecting the steppes with the cities of the Sea of Azov and the Black Sea littorals, and with the Caspian Sea by way of the Volga, existed between the eighth and tenth centuries. Three cultural levels were uncovered. The lowest stratum, which was formed by the clay floor of a building, yielded a few objects including iron slag, animal bones, and some handmade pottery. Of

⁸ *Raskopki pravoberezhnogo Tsymlianskogo gorodishcha* [Excavations of the *gorodishche* on the right bank near Tsymliansk] in *Kratkie Soobshcheniia*, IIMK, IV, pp. 58-62, 1940.

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particular interest were the remains of a dwelling of the semi-dugout type. This was probably a conical structure similar to a yurt. The lower part consisted of an oval pit (2.5 by 1.8 metres) plastered with clay on the walls and on the floor, and with a round hearth pit near the north wall. Large, flat-bottomed vessels of Maiatskoe type with slightly convex walls and sharply flaring lips decorated with notches were found both inside and outside the dwelling.

The second period was represented by brick and mortar buildings similar to those of the Sarkel *gorodishche*. To this period also belong the remains of fortress walls, 4.5 metres thick and surmounted with round towers, built of dressed white limestone. The pottery, almost entirely wheel-made, consisted of vessels with incised linear and wavy ornamentation; polished ware of Saltovo types; ovoid amphorae; and unornamented well-fired pots of firm, gray clay.

This period was also characterized by a profusion of iron objects; weapons (arrowheads and spearheads); bits and stirrups; and various implements including knives, fragments of buckets, sickles, axes and fish-hooks. Among the few personal ornaments were beads, fragments of metallic mirrors, an earring, and several belt buckles. The second period was terminated by the destruction of the fortifications, materials of which were used for construction during the third period. This destruction could have occurred during the capture of the Khazar city of Belaia Vezha by Sviatoslav Igorevich, Prince of Kiev, in the year 965, as recorded in one of the old Russian Chronicles. Identification of this site with Belaia Vezha had been anticipated by M. I. Artamonov.

The third period was characterized by yurt-like semi-dugout dwellings related closely to those of the first period. The remains of these buildings consisted of clay-paved circular or oval shallow pits, occasionally double (2.5 to 3.0 metres in diameter), with a hearth in the centre. Many dwellings yielded human skeletons with no orientation. From the rubble in storage pits of other houses fish-hooks, chisels, scythes, ploughshares, spades and sickles were uncovered. The abrupt cessation of life in this period probably occurred during one of the invasions of the steppe tribes at the end of the tenth or at the beginning of the eleventh century, at which time after the downfall of the Khazar Kaganate these nomads were undisputed masters of the southern Russian steppes. Some traces of an attempt to repopulate and even to refortify the *gorodishche* at some later period were also discovered.

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V. F. Gaidukevich⁹ summarizes the results obtained during 1932–1939 by the excavations of the Bosporean Expedition at Tiritace (Tiritaka), under the joint sponsorship of the Institute for the History of Material Culture (IIMK) and the Kertch Archaeological Museum. Although the early authors referred to Tiritace as a city, the excavations disclosed that both in general planning and in many other essential traits this settlement did not resemble the usual ancient cities. Tiritace, however, was a well-developed Bosporean industrial settlement, devoted primarily to fish-salting.

During the Roman period Tiritace was one of the most important centres for the export of fish products. The excavations at the western part of the site were a continuation of those of 1938, during which a building of the sixth century B.C. containing archaic terracottas and many other objects was discovered. During 1939 this building and many adjoining service structures were uncovered. These included a barn or storeroom, a paved courtyard, a basement with a flight of steps leading into it, and extensive grain storage pits lined with stone.

A late Roman dwelling complex was buried under a stratum of débris 3.5 metres thick. The walls were preserved to a height of 2.0 metres. The main building was paved with flagstones and communicated with a small courtyard also paved with flags. In the floor of this building, opposite the entrance, was sunk a large pithos with a capacity of several hundred litres. Near it were found many charred grains of wheat and several hand-mills, indicating that the vessel was used for grain storage. A pit, one metre in diameter, 0.68 metre in depth, and filled with ashes, contained a pottery lamp, a bone needle for weaving fish-nets, an iron hammer, whetstones, and a grey pottery pitcher of Sarmatian type decorated by a band of intersecting lines. Upon the floor were also scattered many fragments of moulded pottery; several lamps; a round bronze mirror with an eyelet in the centre; clay spindle-whorls; fragments of glass vessels and red lacquer-ware platters of late Roman type, one of which was stamped with a cross; and several bronze coins. Many large, pointed amphorae of the late Roman period were also found; several had been repaired with lead rivets. The building had perished as a result of a conflagration; the floor was covered by coal and ashes from the incinerated wooden parts of the

⁹ *‘Itogi poslednikh raskopok drevnei Tiritaki’* [Results of the latest excavations at ancient Tiritace] in *Kratkie Soobshcheniia*, IIMK, IV, pp. 54–8, 1940.

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structure. Many of the amphorae, which had apparently been stored on the second floor, had fallen down during the fire. An outside stone stairway parallel with one of the walls of the building led to the upper storey.

The prevalence of burned buildings, of which several had been previously discovered, suggests that Tiritace was attacked and partially destroyed during the fourth century A.D. The finds from the late Roman building also included the remains of a charred cable, probably a part of some sort of fishing gear, and of two dozen stone net-weights. A small fish-salting cistern (1.75 by 1.37 by 1.90 metres) was found in an adjoining outhouse.

In the lower part of one of the walls of the main structure was unearthed a clay-covered niche, with the bones of a young pig and of a lamb, covered by sand, together with bony plates of hausen (*Acipenser huso*) and sherds of amphorae. This niche, which also contained a clay lamp, was apparently connected with some ritual.

A small stone bench used for pressing grapes was found on a dais in the courtyard. Many finds connected with wineries indicate the important role played by viticulture in the economic life of the Bosphorus during the late Hellenistic and Roman periods, when the importation of wines from abroad became curtailed. A second large winery of the second century B.C., discovered in 1939, had been partially buried by a railroad embankment. None the less, the extensive platform used for pressing grapes was uncovered, together with a cistern for the storage of grape juice with a groove leading from the platform. Both the platform and the cistern were faced with a white cement differing in composition from the Roman cement of that period. This evidence will help to reconstruct the evolution of viticultural technique in Tiritace from the second century B.C. to the third century A.D.

Recent excavations indicated that Tiritace was sacked during the fourth century A.D. The destruction of this city occurred as a result of one of the mass tribal migrations in the northern Black Sea area which led to the final dissolution of the Bosporean state. However, Tiritace did not disappear altogether at that time because many of the objects unearthed belonged to the early medieval period. For example, in the western part of the city a quantity of pottery was excavated, including a pithos stamped with the potter's name and an incised cross of the type attributed to the fifth or sixth century A.D. The fisheries continued to exist during this period although most of the Roman cisterns had become filled. The main occupation of the local population seems to

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have been agriculture. Tiritace was abandoned during the seventh or eighth century of our era.

The excavations also yielded many sherds of archaic ware, including a painted fragment. Particularly abundant were the finds from a late Roman house, and also those from a Bosporean house of the third or fourth century A.D.

A stoppered amphora, attributed to the fourth century of our era, found near one of the fish-salting complexes, contained nearly 3.5 kilograms of crude oil (petroleum). The amphora was of the elongated, cylindrical type with a conical bottom. The neck had been closed by straw which, when permeated with the solidified crude oil, formed a completely hermetic seal. The liquid was analyzed by V. V. IAnovskii of the Leningrad Chemico-Technical Institute, who described it as 'crude oil or a product of crude oil'. According to the classical authors crude oil was used not only for lighting purposes but also as a medicine.

GEORGIA

The Nicholas Marr Institute for the Study of Language, History and Material Culture (EIMKI) in Tbilisi (formerly Tiflis) was part of the Georgian branch of the Academy of Sciences of the U.S.S.R.

Melikset-Begov, a member of the staff of EIMKI, published an historical monograph¹⁰ on the Armazni area. Another report by Kalandadze¹¹ on excavations in the Armazni Gorge, describes a group of ancient monuments near the confluence of the Kura and Aragva rivers in the vicinity of the ancient Georgian capital of Mtskheta, thirty kilometres northwest of Tbilisi.

The Armazni area contained a fortified town known to Strabo as 'ΑΡΜΟΣΙΚΗ and to Pliny as Harmastis. This was the oldest capital of Iberia or Kartlia. Among the archaeological sites in the Armazni Gorge were the ruins of the Armaz monastery (*Armazis Monasteri* or *Monasteri Ahalkalakuri*, 'of the new city'); remains of a settlement (Armazi or Kartli); a castle, known to Leonti Mroveli, the Georgian historian of the eleventh century, as 'the castle at the point of the

¹⁰ L. Melikset-Begov, 'Armazni: istoriko-arkheologicheskii ocherk' [Historico-archaeological description of Armazni], 'Masalebi Sakartvelos da Kavkasiis Istoriatvis' [Materials for the Study of Georgian and Caucasian History] No. 2, pp. 1-119, 1938. [In Russian, with Georgian summary].

¹¹ A. Kalandadze, 'Armazis arkeologiuri ekspeditsiis tzinastzari angarishi' [Excavations by the Armaz Archaeological Expedition] of EIMKI, in *Moambe* [Bulletin] II, No. 3, pp. 365-400, 1937. [In Georgian].

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Armaz prominence'; and, on a mountain nearby, an ancient church of St. Nina (*Ninotzinda*), and the ruins of a fortification.

The area is mentioned under its present name in the oldest monument of Georgian historical literature, the *Kartlis-Moktseva* ('The Conversion of Georgia').

According to Melikset-Begov, the castle near the confluence of the Kura and Aragva rivers marked the northerly boundary of the Achaemenid rulers and their successors in Trans-Caucasia. Consequently, the area is rich in place-names of Iranian origin. Mroveli wrote that the area was originally known as Kartli after the legendary forefather of the Georgians, Kartlos, son of Targamos, great-grand-nephew of Noah, who came here from Mount Ararat. According to the same historian and the Chronicle of 'The Conversion of Georgia', the area was named Armazni after an idol (whom Melikset-Begov identifies with Ahura-Mazda) erected by Georgian King Pharnavaz in the third or second century B.C., but destroyed during an earthquake at the arrival of St. Nina, who converted Georgia.

Mroveli states that the fortifications on Armazi mountain and the castle on the prominence were built by Afridun's viceroy, Ardam (fourth century B.C.), who taught the Georgians the use of cemented stone. He is also credited with having built the cemented walls of Mtskheti.

Melikset-Begov considered that the structures, associated with the star worship of the Georgians, were of Neolithic type.

Dion Cassius stated that the Acropolis of Armazi was occupied by Pompey in the year A.D. 65. In the middle of the first century¹² the Armazni area formed a separate kingdom on the right bank of the Kura river, the left bank being occupied by a kingdom with its capital at Mtskheti.

The fortress at Armazi, ruined during an earthquake, was restored by King Bakur II, and destroyed subsequently by the Persians under Firuz before 466. After the Persian wars, Armazi was again restored, but its importance decreased upon the growth of the fortress of Tiflis.

During the Arab invasion (643-645), Armazi is mentioned in the Acts issued by Ibn Abd-al-Malik Maslama (recorded by Al Tabari) as one of the towns furnishing tribute. The town was finally destroyed during the invasion of Marwan the Deaf (663-668) and was never again rebuilt.

¹² Prince Vakhushti gave the date as A.D. 55-129.

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The monastery, built upon the site of a pagan sanctuary, is first mentioned during the eleventh century. It was destroyed repeatedly by the Mongol horde and during the invasion of Shah Abbas (1616), and was finally abandoned early in the eighteenth century after destruction by the Turks. According to Melikset-Begov, the buildings, now extant but largely ruined, date from the middle of the seventeenth century.

The church at the top of Armazni mountain, known as St. Nina, was established by King Bakur II (A.D. 342 or 362 to 364), who caused it to be erected upon the spot occupied by the Armazni idol. The modern building is of far more recent date. Melikset-Begov suggests that the ancient church actually stood on the site of the original main castle of Armazni.

The small castle on the prominence has been attributed by Melikset-Begov to 'Early Feudal Georgian', namely, the first to sixth century A.D. It is mentioned as early as the fourth century B.C.

According to numerous contemporary (1392-1673) grants made to the Patriarch of Mtskheta by the Georgian kings, Armazni with its serfs was the property of the See, which also levied a tax on each load carried up or down the gorge.

To summarize, the area of Armazni contained the ruins of two villages; several ancient burial grounds, some of which contained inhumations in stone boxes, first excavated by G. K. Nioradze; and many caves.

According to Kalandadze's report the first large-scale excavations were undertaken here during 1937 by the Georgian Branch of the Academy of Sciences of the U.S.S.R. Kalandadze gave a detailed description of the excavation of a large bath of the first century of our era, reminiscent of a Roman bath, located at the confluence of the Kura and the Aragva rivers.

Melikset-Begov enumerated briefly the finds from the Armazni district of which the most famous was the inscription in Greek (dated A.D. 75), discovered in 1867 and now deposited in the Georgian Museum in Tbilisi. According to this inscription, the Romans, in token of the friendship of the Iberian king, Mithridates, son of King Pharasman and of his son, Amasaspes, and of the people, with the Caesar Vespasian Augustus, Titus Caesar, son of Augustus and Domitian Caesar, son of Augustus, 'fortified the walls' [apparently of the Armazni fortress].

Other objects, mainly in the collections of the Georgian Museum

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include five Georgian inscriptions, glazed tiles, and bronze and glass ornaments.¹³

Grave-goods from Karsan nearby have been described by Nioradze.¹⁴ The ancient glass factory at the same place was described by Lemlein.¹⁵

CENTRAL ASIA

1. KIRGHIZ S.S.R. During 1939 excavations were conducted in the Talas Valley by the Expedition from the Institute for the History of Material Culture (ИМК) and the Hermitage Museum, both in Leningrad, under the leadership of A. N. Bernshtam.¹⁶

At Kenkol, near the headwaters of the Talas river, eight tumuli, seven with catacomb burials, yielded objects which threw light on the history of the nomads during the first century of our era. The catacombs, cut out of the loess with a tool closely related to the modern Kirghiz *chot* (? adze), were dug beneath the tumulus at a depth of 3.5 metres from the surface of the ground. The earthwork usually contained one vessel, poorly fired, although some were of very excellent, probably Soghdian, workmanship, and others had polished ornamentation. A slanting corridor led into each catacomb, and the entrance was covered by a stone slab.

Burials were usually double, sometimes containing children. The skeletons belonged to a mixed group, some of them retaining Mongoloid traits. Each cranium, including those of children, had undergone artificial cranial deformation. Two skeletons of Europoids, possibly slaves of the local tribes belonging to the Pamir-Farghana race, were placed across the entrance to one catacomb containing two Mongoloid skeletons with deformed crania. The skeletons of the slaves, accompanied by pottery vessels, were placed on a crude bier of twigs.

The rich grave-furniture of the catacombs consisted of wooden objects, including bowls and goblets, as well as small wooden tables for the preparation of foods. A few of the wooden vessels had been mended with copper wire and copper patches. Two catacombs contained parts of cradles very similar to the *peshik bala* [cradles] of the modern Kirghiz. In one catacomb stood a bed consisting of bent boards with a border of scantlings forming a raised border.

¹³ These are described by P. S. Uvarova in *Museum Caucasicum* v, 93-94.

¹⁴ G. K. Nioradze, *Karsanis Hevis Sasaphleo*, Bull. Mus. Georgi, IV, 1-54, 1926.

¹⁵ G. G. Lemlein, *Saistorio Krebuli*, III, 7, 1921.

¹⁶ *Arkheologicheskie issledovaniia o doline z Talas* [Archaeological Investigations in the Talas Valley] in *Kratkie Soobshcheniia*, ИМК, IV, 45-6, 1940.

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The majority of the catacombs contained burials of warriors accompanied by their weapons, wooden arrows with triangular iron arrowheads of Scythian type, large hafted bone arrows, and bone inlays from composite bows. The burials of women were accompanied by wooden vessels, bast baskets, cooking pots, and deep vessels with handles, for water storage.

In one catacomb were mummified bodies with well-preserved clothing. They had been placed on a bier, which consisted of boards resting on stones, covered with hay. The male skeleton, lying on his back, was oriented from east to west with the head turned toward the north. At his left hand was a staff. The clothing consisted of a full shirt of silk, leather breeches and soft leather boots of the type still worn in Central Asia. Under the head was placed a reed pillow. The body of the woman was only partially mummified. Her head and face were covered with a piece of silk tied at the nape and by a band of red silk on the head. Small beads fastened with a copper hasp, were around the neck. She was dressed in a silk robe held together in front, and in leather breeches and soft boots. A wooden goblet with a handle was placed in a niche beside the body. Beside the head were placed a wooden bowl with food and an earthenware water-jug, while near the feet stood a clay cooking-pot, containing a hollowed pumpkin of the type now used for carrying chewing tobacco, and a stone spindle-whorl. Lamps of lightly baked clay were placed at the head and at the foot of the burial. The silk used in the clothes was of Chinese workmanship of the Han period (second century B.C. to second century A.D.). This was the fifth discovery of Han silk and the second discovery of clothing of that period. The cut of the clothing and the embroidery of the sleeves were similar to the finds from the Noin-Ula burials in Mongolia. On the basis of the well-preserved fragments it was possible to reconstruct the bow and arrow.

These burials are thought to belong to some nomadic tribe, possibly the Huns, at the beginning of our era. The bodies represent the most ancient finds of the Mongoloid type of Central Asia. The culture of the catacombs is most closely connected with that of the modern Turkish-speaking peoples of Central Asia.

2. During 1939 a joint Expedition from the Institute for the History of Material Culture (IIMK), and the Scientific Committee of the Soviet of Peoples Commissars of the Kirghiz S.S.R., continued the work of the previous season in the Chu Valley and also in the valleys of the Small and Great Kemin rivers. Under the direction of A. N.

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Bernshtam,¹⁷ the excavations of the *gorodishches* at Krasnaia Rechka (Saryg) were limited to the surrounding hills and extramural structures. The ruins of a Soghdian castle, consisting of eight rooms in the form of elongated rectangles, was discovered. This was a typical *keshk*, a fortified dwelling of a slave-owning landlord. The abandoned castle, later utilized as a Zoroastrian and Mohammedan cemetery, was dated tentatively in the sixth or seventh century A.D.

The Zoroastrian burials were in large ossuary urns with decorated incised lids. In one grave Turgesh coins and a golden armlet with the effigy of a human head were unearthed. The Mohammedan cemetery of the Karakhanid period did not contain any grave-furniture.

In the second Moslem *tepe*, burials with metal objects and many beads were uncovered. Excavations of the third *tepe* disclosed the interior of a stucco building decorated with frescoes. Another Moslem building with a square ground plan was found. This was attributed to the eleventh or twelfth century. Among objects of particular interest was the lip of a storage vessel stamped with a Soghdian inscription.

Near the *gorodishches* three dwelling-complexes were discovered. One of these consisted of the remains of an unbaked brick structure with stucco walls and with carved stucco ornamentation retaining vestiges of painting. Among the finds was a curious pot handle in the form of a human figure of Buddhistic type. At another site, a building enclosing storage pits was uncovered. Four cultural strata were found; the Soghdian stratum yielded some pottery of archaic type.

The third excavation disclosed another unbaked brick dwelling with the walls decorated by carving and painting over the unbaked brick surface, and closely reminiscent of the panels from Samarra. Plant-ornament including leaves and grape-vine formed the motifs. The painted decorations were of geometric ornamentation.

The objects from the *gorodishche* were attributed to the period from the fifth to the twelfth century A.D.

The excavations at Ak Peshin were a continuation of those of 1938 and were concentrated in the supposed *kitai* (*Kara Khitai*) quarter of the town. The finds included tiles of Chinese type, tiles ornamented with appliqué ornamentation of plant elements, and a peculiar type of pottery differing entirely from any known examples from Central Asia but similar to Kharakhoto ware. Evidence was obtained that the territory to the southeast of the *gorodishche* was the *kitai* of Balasaghun.

¹⁷ 'Arkheologicheskie issledovaniia v Kirgizii', in *Kratkie Soobshcheniia*, IIMK, IV, 47-8, 1940.

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During 1939 the Expedition completed the mapping of ancient towns along the Chu river. Large stone human effigies (*babas*) were recorded near the Small Kemin river. In the valley of the Great Kemin two fortified *gorodishches* were located. These were probably the *gorodishches* of ancient Suyab, which according to the testimony of available sources consisted of two parts, Sagur and Kubal. The city of Newaket, located between Balasaghun and Suyab, was identified with the ruins near Orlovka in the Chu region.

In the Chon Kemin gorge a burial-ground of the Turki period (sixth to eighth century) was discovered. Several stone effigies nearby were anthropomorphic representations of obviously non-Turkish type, with European features and long beards.

The work in Kirghizia disclosed the earliest type of settlement in the Seveb river area, preceding that of the formation of the towns, and consisting of groups of separate fortified villages of the Soghdians such as the one at Krasnaia Rechka *gorodishche*. The medieval town, with its *shahristan*, *rabad* and *kunya-ark* is represented by Ak Peshin (Balasaghun), which according to Barthold was the capital of the Karakhanids and the Kitai in the eleventh or twelfth century A.D.

UZBEK S.S.R. During the construction of the irrigation canal in the southern part of the Farghana Valley, 270 kilometres in length, and involving the removal of 18 million cubic metres of soil, an Expedition organized by the Scientific Committee of the Soviet of Peoples Commissars of the Uzbek S.S.R. supervised the removal of archaeological finds.

The Expedition was divided into three groups of eleven research workers, all under M. E. Masson.¹⁸ At the conclusion of the work the Expedition engaged in the survey of the area adjoining the canal.

The objects ranged from flint implements to specimens from the period of the last Khanate of Khokand. The richest finds, belonging to the period before the Arab conquest, included many bronze spear-points and arrowheads, rarely found in Farghana. Particularly well-represented were the remains of the Davanian culture (from Ta-yüan) mentioned in Chinese historical sources and attributed to the second half of the first millennium B.C. This culture, represented by several *gorodishches* and many burials, is characterized by pottery with scratched

¹⁸ M. E. Masson, ' *Ekspeditsiia arkhelogicheskogo nadzora na stroitel'stve Bol'shogo Ferganskogo kanala im I.V. Stalina* ' [Archaeological Supervision during construction of the Great Farghana Canal named after I. V. Stalin] in *Kratkie Soobshcheniia*, ИМК, IV, 52-4, 1940.

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ornament. Among important objects was a cylindrical, handleless jar, decorated by images of pheasants separated by fir trees. In one grave was a bronze buckle consisting of two heads of lionesses facing each other. This buckle is closely related to some of the Achaemenid objects from Iran. To the same period also belonged some petroglyphs near Aravan and on the Airizmachtaz mountains northwest of Osh. These petroglyphs depicted the silhouettes of local horses of the light Oriental type (*argamaks*), highly praised in Chinese Chronicles of the second century B.C. These are unique representations of the famous Davanian horses.

One rock-drawing, depicting a stag with its head thrown back, is reminiscent of the Siberian representations of this animal. Among individual items of particular interest was a large bronze kettle of Scythian type, with three legs and four discoidal handles bearing figures of mountain goats marching clockwise around the kettle.

A number of settlements found by the Expedition yielded high-grade red pottery, closely related to Kushan ware. The finds from a later period include burials and catacombs accompanied by small copper coins of Chinese type with square perforations, but apparently of Central Asiatic origin.

Among numerous archaic and pre-feudal sites recorded by the Expedition were the ruins of ancient Kasan, located to the north of a modern settlement of the same name and considered to be the capital of Farghana in the eighth century. It was discovered that this settlement was abandoned after the Arab conquest. The ruins of Akhsikath, which was known as the main city of Farghana since the ninth century, showed that it was of considerable extent before the beginning of our era. The lowest cultural strata of the site contained painted pottery. This *gorodishche* was covered by a cultural stratum at the end of the twelfth and the beginning of the thirteenth century. Some fifteenth century objects were found in association with the citadel.

The Expedition succeeded in identifying a series of medieval towns, including Rishtan, currently occupied by a cemetery with a sepulchre bearing the name of the author of *Hidaya*,¹⁹ a twelfth century lawyer and author. The ruins of the medieval town of Bab, now known as Muncak Tepe, were discovered on the right bank of the Sir Darya. Additional information was gained regarding the topography of the medieval cities of Marghilan and Khokand. It was discovered that at Andidjan, the site occupied by a nineteenth-century mosque

¹⁹ Burkhan al-Din al-Marghinani.

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was previously occupied by buildings faced with carved unglazed bricks of the end of the thirteenth to the beginning of the fourteenth century, at which time the town was rebuilt by order of the Mongol rulers, Kaidu and Duwa Khan.

At Kuwa, which during the tenth century was the second largest city of Farghana, the upper cultural stratum of its extensive *shahristan* contained materials of no later date than the beginning of the thirteenth century. Subsequently the population migrated to the east of the original city. Among several hundred coins were the first Bactrian coins to be found in this area, including a chalcous of Heliocles, attributed to the second century B.C. Abundant human skeletal material was excavated.

The members of the architectural group discovered a medieval mihrab covered with magnificent carved clay stuccoes at Ashtsakhob *mazar*, near Osh. Only a few fragments of this type of stucco had been found previously.

In the course of many observations it was deduced that the complicated system of irrigation canals had been built almost two thousand years ago. The main strata of the large castle of Sari-Kurghan (ancient Sokh) nearby yielded pottery of Kushan type. Similar ware was found underneath the modern village of the same name.

The expedition also established that a great part of the sandy desert in central Farghana was cultivated some two thousand years ago and that the ruins of the desert contained many sherds of the Davanian and later types of pottery.

URALS

In 1938 N. A. Prokoshev²⁰ conducted an archaeological survey along the Viatka river on behalf of the Institute for the History of Material Culture (IIMK). In addition to studying the extensive collections in the local museums, Prokoshev succeeded in examining, partly measuring, and photographing, five *gorodishches* in the Kirov, Sloboda, and Kotel'niki regions (*Raion*) of the Kirov *Oblast*. A brief description of the results follow in the order in which the sites were examined.

1. The *gorodishche* at Nagovitsina (formerly Cherviaki), four kilometres south of Kirov and standing high above the left bank of the Viatka river, is located on the side of a ravine north of the village, and is now overgrown by a coniferous forest. This site was first described

²⁰ The following summary of results obtained was received through VOKS in a private communication dated 19 August 1939.

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by Spitsin,²¹ who recorded the smallness of the site and the presence of a disproportionately high earthen rampart of an inverted heart-shape called *kokoshnik*. Spitsin wrote that he was unable to understand the purpose of this type of *gorodishche*. Yet the character of the remains from this site indicates that it had been inhabited. Pottery, animal bones, bone implements, and a copper buckle were found. The rampart, which was built of yellowish sand taken from the shallow and narrow moat on the outer side, was 31.0 by 10.9 by 1.8 metres. The *gorodishche* was oriented in a north-northwesterly direction. The entire surface of the platform and also parts of the rampart were covered with pits dug by treasure hunters.

In the Regional Museum at Kirov are exhibited a series of objects found in this area and presented in 1936 by M. P. Griaznov. The traces of the thin cultural stratum, and the few sherds collected on the surface, indicated to Spitsin that while this site was not suitable for excavation it was important because of the great rarity of *gorodishches* of this period along the middle course of the Viatka river.

The cultural remains leave no doubt that this site belongs to the Anan'ino Epoch. The round-based vessels possessed typical Anan'ino elements of ornamentation such as the impressions of a comb-like stamp, and of a cord. The slip had an admixture of finely-ground shells. This pottery is very similar to that from Galkino *Gorodishche*, located at the mouth of the Chusovaya river.

2. 'MAR'IN KOKOSHNIK' ('Mary's tiara') at Chizhi, on the left bank of the Viatka and three kilometres south of Kirov, was first described by Alabin in 1855 and later recorded by Spitsin (*op. cit.* p. 177). Alabin recounts numerous local legends connected with this *gorodishche*. Both authors, however, err in the dating, Alabin attributing it to the earliest Russian settlements in this area and Spitsin considering it to be a later, Votyak, monument.

This site was practically obliterated during the building of a platform for oil tanks. A collection of objects, made at that time, and now in the Regional Museum, consists mainly of potsherds identical with those from the Nagovitsina *gorodishche*. Traces of a cultural stratum were faintly apparent in the denuded places on the slopes. At the foot of the *gorodishche* may be seen the remains of the stratum removed from the platform.

²¹ A. A. Spitsin, 'Materials for the Archaeology of the Eastern Provinces of Russia', fasc. 1, p. 174.

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While not suitable for excavation, this *gorodishche* is interesting as a monument of the Anan'ino Epoch.

3. The mouth of the Cheptsra river was first surveyed. A burial ground was examined near Chepets at the confluence of the Viatka and Cheptsra rivers. Iron daggers and ornaments were associated with the human skeletons. Local natives did not know of any stone implements from this place although some have been preserved in local museums.

Objects of Anan'ino culture in the Kirov Regional Museum, collected by P. Shatilov during 1928, came from a *gorodishche* between Krivobor'e and Gorodniki. This site, recorded by A. A. Spitsin (*loc. cit.* 1, p. 175), is probably the farthest site to the northeast in the Viatka basin.

At Nikul'chino, fourteen kilometres east of Kirov, were located the remains of a strong earthen fortification with high ramparts forming an irregular rectangle. In the centre of the *gorodishche* stood a stone church surrounded by a low rampart. A. A. Spitsin thought that there were two sites: the outer Russian, more extensive and with higher ramparts; and the inner, more ancient, in the centre of the *gorodishche* on the site of the church, and belonging to a pre-Russian site. In the denuded spots along the shore of the river may be seen the remains of fireplaces, silvery-grey old Russian pottery and bones of animals.

According to local historians, Nikulitskoe *gorodishche* may be the last remnant of the town of Nikulitsin, established by the Novgorod people somewhat earlier than Kirov and founded during the twelfth century under the name of Khlynov.

4. The *gorodishches* at Kovrovo and Shabalino, described by Spitsin (*loc. cit.* pp. 170-171), are located near the mouth of the Molom river, seven kilometres from Kotel'nich. No new finds have been made recently except that burial grounds, attributed to the fifteenth and sixteenth centuries, have yielded ear-rings and crosses.

At Kovrovo *gorodishche* three types of sherds have been collected:

- (a) hand-made black with admixture of ground shells;
- (b) hand-made red without admixture, called 'Bulgarian';
- (c) black or silvery-grey, wheel-made, known as 'Russian'.

Many animal bones were also unearthed. The rampart was still well-preserved.

The *gorodishche* at Shabalino had very massive fortifications, reminiscent of the earthworks of Nikulitskoe *gorodishche*. The rampart was exceedingly massive and had a peculiar ground-plan not known

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from other early *gorodishches*. Fragments of old Russian 'silvery-grey' pottery were strewn along the shore; no older type of pottery was found.

Prokoshev, who found that the natives were not aware of any finds of stone implements—although the earlier sources mentioned their presence—explains their absence thus:

(a) flints had been used widely for fire-making until about fifty years ago, and the peasants may have systematically collected all stone implements for use in tinder boxes;

(b) stone arrowheads, regarded formerly by the peasants as possessing curative property are no longer used, and consequently the peasants are no longer interested in looking for them.

ALTAI REGION. The stone mound at Pazyryk in the eastern Altai was opened during 1929 by M. Griaznov, of the State Ethnographical Museum in Leningrad, but many of the objects, now in the Hermitage Museum, remain unpublished.²²

The mortuary chamber of the tomb was a feat of engineering for people who had only bronze tools. The inner vault of thick planks was enclosed in a log cabin. The space between was packed with crushed stone. The pit was covered by three hundred logs resting upon massive beams.

Through a shaft, robbers had pillaged the contents of the vault, including the skeleton—presumably for its vestments. An Altai funeral garment from Katanda, recently restored in the State Historical Museum at Moscow, consisted of three thousand pieces of ermine dyed red and green, fitted in a fish-scale pattern, lined with sable, and decorated with eight thousand miniature carved gilt buttons.

The grave-furniture consisted of scraps of gold leaf, a small leather carving, pieces of felt hangings and the sarcophagus. The wall covering, fastened by copper nails with gilt heads, was black with a white border decorated with blue, yellow, and red festoons and set with conventionalized red and blue tiger-heads. Wooden pegs indicated that mortuary gifts were hung on the walls.

The sarcophagus, hollowed out of larchwood logs, was covered with

²² See 'The Pazirik Burial of Altai', by M. P. Griaznov and Eugene A. Golomshtok, *American Journal of Archaeology*, xxxvii, No. 1, pp. 30-45 and pls. I-VI, 1933; M. Griaznov, 'Pazyrykskii Kurgan', Academy of Sciences of the U.S.S.R. and Hermitage Museum, Leningrad, 1937. [Summary in French]; and H. Field and E. Prostov, 'Soviet Archaeology Today-II', *Asia*, xl, p. 330, 1940. Despite the descriptions previously published on the Pazyryk finds these notes, received from Leningrad during 1940, bring the results up to date.

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shiny brown strips of bark of bird-cherry. The sides bore silvered leather appliquéés of stylized birds.

The most important finds included carcasses of horses and their trappings. The horses were well-groomed, with closely-clipped manes, forelocks, and tails. The ears were notched in various ways to indicate ownership; they had been donated by ten different owners. Ten decorated sets of saddles and bridles and two equine masks had been flung on top of the carcasses. There were also shields of rods and leather, a whip with a wooden handle, and a pouch of lynx fur filled with herbs. The decorations of the trappings were of wood attached with merely a few stitches and intended for ceremonial use.

The saddles and bridles were of the usual design of the period (about 350 B.C.), hitherto known only from representations on Scythian vases and on rare bone and bronze fragments. The saddle, which consisted of two leather pillows stuffed with deer's wool and without either a hard seat or stirrups, was kept in place by a surcingle, a breast band, and a breeching strap. The bridles were decorated with gilt or silver pendants of cedar and buckles with animal figures, occasionally with human effigies, and with imitations of scalps. The coloured felt saddle-covers had appliqué designs of felt or leather, and pendants of felt, leather, dyed fur, and horsehair. The masks were made of thick felt and leather. The nose of the reindeer mask was in the form of a tiger of bright blue fur, set with gold discs; the remainder was coloured leather with golden leaf in rosette openings. The antlers were of thick leather covered by thinner leather with ornamental openings, and tipped with red horsehair tassels. The second mask depicted the struggle between a horned winged feline and a tiger. The head and wings were of leather of several colours surmounted by a red horsehair mane. The reindeer mask is regarded as a survival of funeral rites of the period preceding the appearance of the horse.

The artistic execution of these objects is of a very high order. More than two hundred carvings on buckles and clasps represented animals, heads of animals, and combinations of ornamental motifs resembling plant-ornaments, but derived from parts of animals, which also appeared on saddles and straps. Of particular interest were the bit ornaments in the form of galloping deer, argali and other animals.

The artistic motifs from Pazyryk range from extremely stylized renderings to naturalistic portrayals of animals. In addition to elk, deer, argali, bezoar, and tiger, appear such fantastic creatures as a winged tiger either with a tail terminating in a bird's head or with a vulture's beak and antelope horns, and many others.

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No other Scythian or Siberian culture shows such a variety of ornamentation. At least eighty pictorial and ornamental motifs were used by Pazyryk craftsmen.

Other interesting subjects were the fighting animals on the saddle covers; carvings of a tiger tearing the throat of an argali, or another tiger tearing the croup of an elk, representations of fish or a dragon with the head of an argali in its teeth; an immense bird of prey bearing an elk in its talons, or a winged tiger holding a mountain goat by its leg and withers. Because of the fantastic nature of the subjects these representations could hardly be the mere products of artistic imagination, but rather vestiges of totemism or symbols of cosmic or religious concepts.

Every animal motif from Pazyryk *kurgan* has its counterpart in widely separated sites ranging from Asia to eastern Europe. According to the Soviet archaeologists the 'Scytho-Siberian animal style' is neither unique nor does it spring from a single source, but rather has it developed from the common economic and social bases of different cultures.

According to Griaznov, however, the art of the Altai region was completely local, not having come from outside sources and not having served as a fountain-head for other regions. At the same time the dwellers in the Altai readily adopted any artistic motif which came from a similar cultural group. Thus, similarities between the finds at Pazyryk and the art of Achaemenid Iran can be explained.

SUMMARY

This report gives in brief some of the results obtained by Soviet archaeologists during 1939-1940. The authors wish to express their gratitude to the Director of the Institute for the History of Material Culture (IIMK, formerly GAIMK) in Leningrad who submitted the report from which this paper was largely written.²³

From information received during October numerous archaeological units are now at work in many areas of the Soviet Union. In a recent conversation Dr Ales Hrdlicka informed us that during his visit to the U.S.S.R. in the summer of 1939 he was particularly impressed with the standard of technique observed during excavations in Siberia. It is some slight consolation to know that even at this time archaeological researches are still in progress in the northern part of the Eurasiatic continent.

²³ Miss Dorothy Pedersen assisted with the editorial revision of the original text.

Notes and News

THE DISTRIBUTION OF CURRENCY BARS

It is well known that currency bars are almost entirely confined to the region of the Early Iron Age B (southwestern) culture, and it is generally held that the majority of these bars were made of Forest of Dean iron.¹ The richness and accessibility² of the iron ores of the Forest, and the evidence for a considerable population on the flanks of the lower Severn Valley,³ make this view probable, but no conclusive metallurgical evidence of such derivation for any currency bar has been adduced.⁴ The distributional evidence bearing on the problem has never been adequately studied, the interest of scholars having been almost exclusively centred on Reginald Smith's thesis, now generally accepted, that the bars were used as currency, and indeed manufactured for that purpose.⁵

The following notes, accompanying a map, a diagram and a revised list of sites, will deal with currency bars geographically and quantitatively, with a view to determining the weight of the evidence in favour of Forest of Dean origin. The list provides seven sites

¹ The references to the Forest of Dean in the literature are for the most part incidental, e.g. E. T. Leeds, 'Excavations at Chun Castle', *Archaeologia*, 76, p. 237, and E. Wyndham Hulme, 'Currency Bars and Water-Clocks', *ANTIQUITY*, 1933, p. 61.

² On this see *Antiq. Journ.*, 1939, XIX, 387, and figs. 9-10.

³ Contrast the *relative* density of finds and sites of the Bronze Age in this district with that of Iron Age B finds and sites. *Personality of Britain*, 3rd ed., map c, and fig. 11a.

⁴ Professor Gowland made a 'chemical and microscopic examination' of two currency bars submitted to him in 1904, provenance not stated. He reported that Bar A was 'apparently made from meteoric iron', the use of which, he adds, must have been quite exceptional. Bar B, on the other hand, was 'forged from a bloom or lump of malleable iron'. He regarded it as difficult to speak with certainty of the source of the ore of bar B, but was 'inclined to believe it was the Forest of Dean and not the Weald'. *Proc. Soc. Ant.*, 1904-5, ser. 2, XX, 194.

The possibility of determining the source of the bars on the basis of spectrographic analysis of likely ores is being investigated by my colleague Dr F. J. North, but it has not, in present circumstances, been convenient to collect the necessary ores.

⁵ The only distribution-map (other than sketch maps) is that prepared by Mr H. St. G. Gray and published in *The Glastonbury Lake Village*, vol. II, p. 399, and this makes no distinction between single finds and hoards. Mr Gray publishes an annotated list of sites with this map, based on those published by R. A. Smith in his classic series of papers in *Proc. Soc. Ant.*, ser. 2, XX, 179 ff., XXII, 377 ff., and XXVII, 69 ff.; also *Arch. Journ.*, LXIX, 421 ff. But both authors treat the problem of distribution in less detail than it seems to me to merit.

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additional to those recorded in earlier lists :—Sudeley Castle, Glos. (doubtful); Kingsdown Camp, Mells, Somerset; the river Thames at Marlow, at Datchet, and at Hammersmith; Burton Latimer, Northants.; and Settle, Yorks. The Bourton on the Water hoards (hitherto deduced as two, from obscure records) have been reduced to one.⁶ One site is omitted: Wayland's Smithy, Berks.

On the map a find of from one to five bars is shown by a dot; a dotted circle indicates more important finds which can properly be described as hoards.

It will be seen that there are two concentrations, in addition to scattered finds; one in the Dorset-Somerset region, and one in the Malvern Hills-Cotswold district. The former is where one would expect currency to have been wanted by the Iron Age B people, namely in a rich and populous centre of their culture, near Poole Harbour, a focus of their continental trade.⁷ But until currency bars are found in Brittany, the latter point must not be pressed.

Though no currency bar has been found in the Forest of Dean the existence of the Malvern-Cotswold concentration points to this ore-field as the chief source of supply. Such a concentration is most easily explained as representing important centres of the folk who controlled the mines; and the induction is rendered still more probable when the distribution of currency bars is considered quantitatively. Hoards of currency bars run up to hundreds, the largest containing 394; all such are in the Malvern-Cotswold region. In other words, if we confined the hoard symbol on our map to aggregates of a hundred or more—which is no more and no less arbitrary than the selection of 'over 5' as justifying that symbol—there would be four hoards and four only on the map: and all of these in the Malvern-Cotswold region.

The important corollary to such a re-assessment is that the southern group would fall into place with the isolated finds on the map, as peripheral and secondary, and therefore of minor importance from our standpoint.

For the weight of concentration in the northern area to be grasped graphic presentation is necessary; and the diagram has been constructed accordingly. The vertical bars represent units of currency; the horizontal spacing represents units of distance (miles) from

⁶ Miss L. F. Chitty, F.S.A., Mrs E. M. Clifford, and Mrs B. H. St. J. O'Neil, have kindly helped me with these additions and modification.

⁷ J. P. Bushe-Fox, *Hengistbury*, Research Rep. Soc. Ant., 1915, no. III, pp. 8-10.

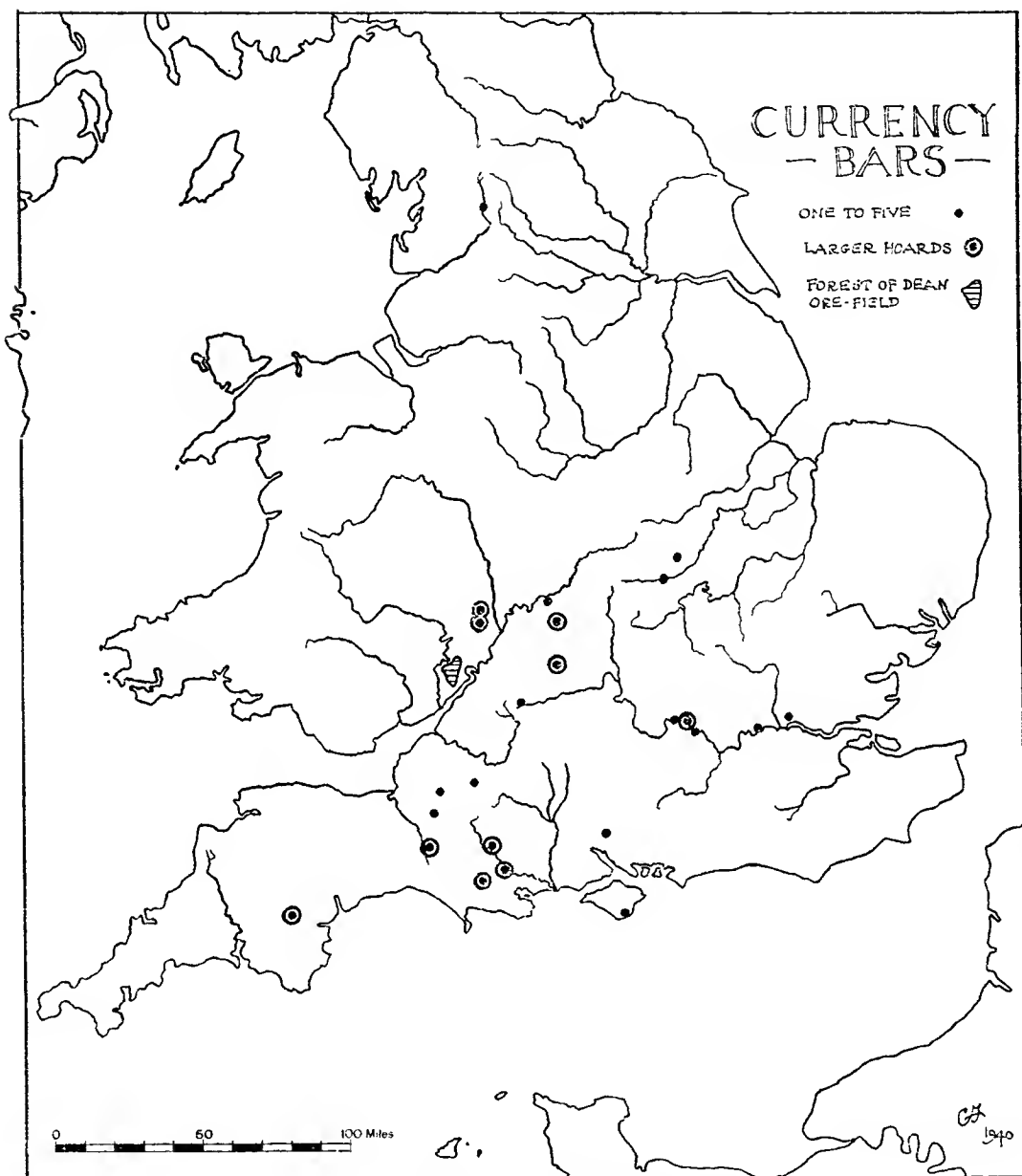


FIG. 1. THE DISTRIBUTION OF CURRENCY BARS

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Cinderford, centrally situated on the eastern outcrop of iron ore deposits in the Forest.⁸

The three tall black bars on the left of the graph represent mainly the two Malvern hoards, the Meon Hill and the Bourton on the Water hoards, all within between 21 and 39 miles from the ore-field. The bar immediately beyond these mainly represents the Ham Hill (Somerset) find; all the others are negligible numerically. Put in another way: the total number of currency bars known is $997+x$ (see list). Of these $840+x$, or 84.3 per cent., come from sites within a radius of 40 miles of the Forest of Dean, all the more important of these being grouped to the north and east of the Forest. The remainder of the finds, totalling about 157, and representing 15.7 per cent. of the whole, is sited at various points from 41 to 164 miles from this centre.

It is recognized by students of distribution-maps of chance finds that no pattern is free from error, and that no matter how numerous the site-marks may be, caution in interpretation is essential. In the case of currency bars this caveat is very necessary, for the finds are comparatively few. But it is no less a matter of experience that when a very marked and definite trend is demonstrable in a distribution-pattern, later discoveries (or additions gleaned from a scattered literature) seldom neutralize that trend.

It may provisionally be concluded then, that the Forest of Dean was the principal source of the ore for currency bars; that the hoard sites to the north and east of the Forest represent the centres of population, mostly fortified, of the controlling tribe or groups. That these centres were so far from the ore-field is a curious fact. It seems likely that the manufacture of the bars was carried out thereabouts, and not in the Forest. The Forest region would certainly be unattractive to ruling clans who were mainly pastoralists or agriculturists, though there are considerable areas of country, originally fairly open, with well-drained and fertile soil nearer than the 20 miles of the Malvern or the 30-40 miles of the Cotswold countrysides. In attempting interpretation, we are, of course, faced with completely unknown political factors. The controlling groups were probably elements of the Dobuni; had the influence of the Silures—centred somewhere near Caerleon, Monmouthshire—extended into the Forest, currency bars would surely have turned up in the camps on the limestones bordering the lower Wye or on the South Wales littoral.

⁸ See a recent geological map of the Forest of Dean, published in *Antiq. Journ.*, 1939, XIX, p. 388, fig. 9.

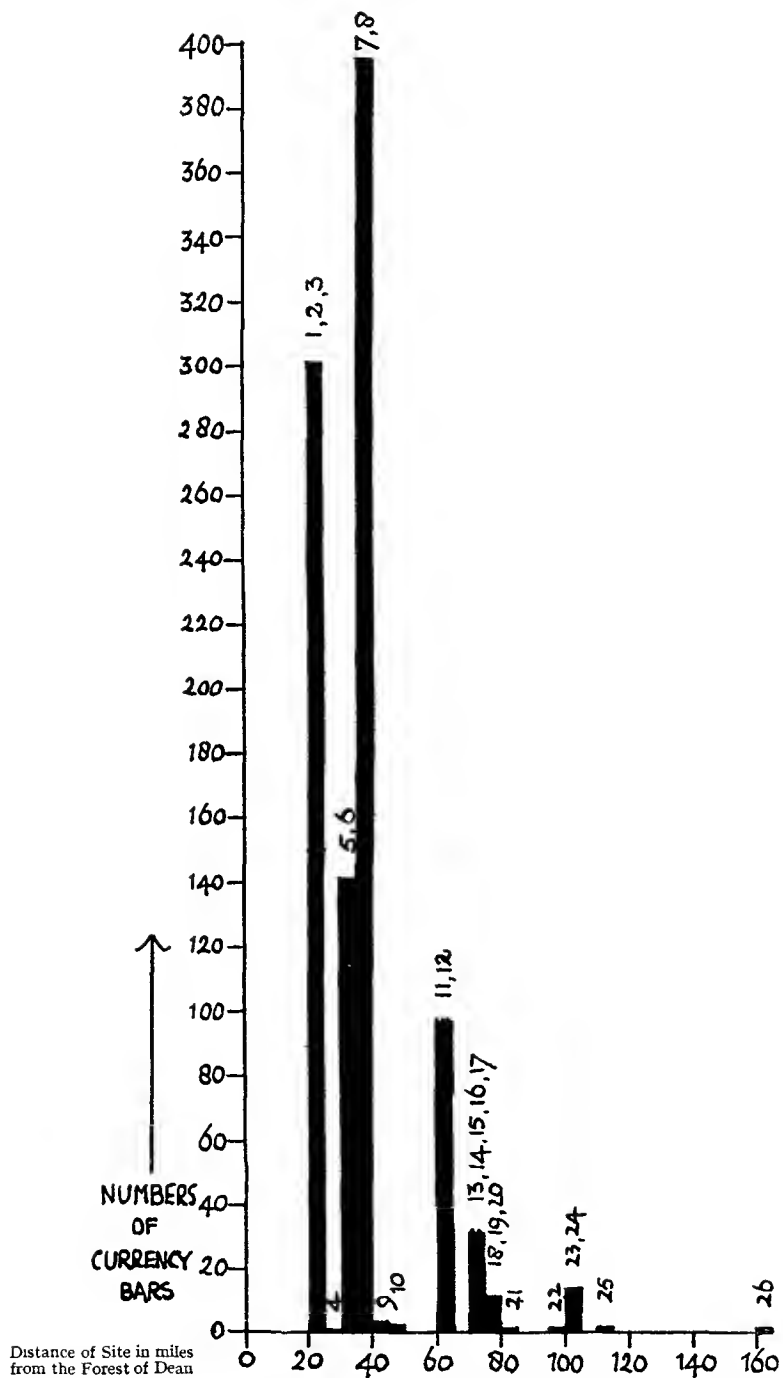


FIG. 2. THE DISTRIBUTION OF CURRENCY BARS
(The numbers refer to the list)

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SITES YIELDING CURRENCY BARS, ARRANGED ACCORDING TO DISTANCE FROM THE FOREST OF DEAN⁹

Reference No.	Site	Chief References	No. of Bars	Miles from Cinderford
1	Malvern, Worcs.	<i>P.S.A.</i> , xx, 183-4 and xxii, 340	150	21
2	Malvern, Worcs.	<i>P.S.A.</i> , xx, 183-4 and xxii, 340 ¹⁰	150	21
3	Sudeley, Glos.	Inf. Mrs E. M. Clifford ¹¹	2	25
4	Minety, Wilts.	<i>Glastonbury</i> , II, 402	1	27
5	Salmonsbury Camp, Bourton on the Water, Glos.	<i>P.S.A.</i> , xxvii, 69-71, and information from Mrs O'Neil ¹²	c. 140	33½
6	Littleton, Worcs.	<i>P.S.A.</i> , xxii, 340	1	33½
7	Meon Hill, Glos.	<i>P.S.A.</i> , xx, 183, and xxii, 337- 40, and <i>Glastonbury</i> , II, 402	394	38½
8	Kingsdown Camp, Mells, Som.	<i>Archaeologia</i> , LXXX, 87	2	40
9	Wookey Hole, Som.	<i>Glastonbury</i> , II, 400	3	41½
10	Glastonbury, Som.	<i>Glastonbury</i> , II, 395-6	2	47
11	Ham Hill or Hamdon, Som.	<i>Arch. Journ.</i> , I, 165; <i>P.S.A.</i> , xx, 183; <i>Glastonbury</i> , II, 399-400	70-80	61
12	Hod Hill, Dorset	<i>P.S.A.</i> , xx, 182; <i>Glastonbury</i> , II, 401	17+	65
13	Spettisbury, Dorset	<i>P.S.A.</i> , xx, 182-3	5+	71
14	Milborne St. Andrew, Dorset	<i>Glastonbury</i> , II, 401	18+	72
15	Thames at Marlow, Bucks.	<i>Arch. Journ.</i> , LXXXVI, 74	2	72
16	Winchester, Hants.	<i>P.S.A.</i> , xx, 183	4	73
17	Hunsbury, Northants.	<i>Arch. Journ.</i> , LXIX, 422, and XCIII, 67	2	73
18	Thames at Maidenhead, Berks.	<i>P.S.A.</i> , xx, 184	7-8	80
19	Thames, Berks.	<i>P.S.A.</i> , xxii, 341-2	1	80(?)
20	Thames at Datchet, Bucks.	<i>Arch. Journ.</i> , LXXXVI, 74 ¹³	2	80
21	Burton Latimer, Northants.	Inf. R. W. Brown, Esq., Northampton Museum	1	83
22	Thames at Hammer- smith	<i>Arch. Journ.</i> , LXXXVI, 88	1	98
23	Holne Chase, Devon	<i>P.S.A.</i> , xxii, 341; <i>Glaston- bury</i> , II, 401	12	102
24	St. Lawrence, Ventnor, I. of W.	<i>P.S.A.</i> , VIII, 312-13; <i>Glas- tonbury</i> , II, 403	2	102
25	East Ham, Essex	<i>Glastonbury</i> , II, 403	1	111
26	Settle, Yorks.	<i>Ant. Journ.</i> , XIX, 90	1	164

notes see page 433

CYRIL FOX.

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⁹ Based on R. A. Smith's list in *Proc. Soc. Ant.*, ser. 2, xx, pp. 184-5, and H. St. G. Gray's list in *The Glastonbury Lake Village*, II, 398. All references to the *Proc. Soc. Ant.* are to volumes in the second series.

Two 'currency bars' are recorded from Wayland's Smithy, Berkshire (*Ant. Journ.*, 1921, I, p. 188). Recent re-examination in the Department of British and Medieval Antiquities, and in the research Laboratory of the British Museum has however shown, as I am enabled to state by courtesy of the Keeper, that the currency bars discovered in the course of the excavation of this site, are in fact blacksmith's ironwork very unlikely to be older than the 18th century. They are probably the two halves of a single object, their narrow ends having been united in a forged joint. These objects are therefore omitted from my list.

¹⁰ 'In the following year a second deposit of 150 bars was found three or four yards further up the hill'. (*Proc. Soc. Ant.* xx, 183).

¹¹ Antiquities found on the Sudeley Castle estate have for many years been preserved at Sudeley Castle, see *Ant. Journ.*, xvii, p. 446 and xviii, pp. 75-6, for published examples. Two currency bars are in the collection. While it is by no means improbable that these were found in the parish, the fact that Salmonsbury is less than ten miles away from Sudeley, and that of the 140 bars found in 1880 the location of 40 only is known, demands caution.

¹² Currency bars from Salmonsbury, Bourton on the Water, Gloucestershire. Mrs O'Neil kindly provides the following record:—The following information about the currency bars found in Salmonsbury has been collected first hand by myself during 1931-34, from J. C. Milton, the son of the man who found and dug up the bars and from two old inhabitants of Bourton who were present when the find was made and who watched the proceedings.

'The history of the find is, that due to the burning down (in 1880) of the farm barn that stands in the centre of the camp, gravel was needed for the work of rebuilding. This was dug and brought from the inner slope of the inner northern rampart of the camp, a distance of two fields away. While digging the gravel the currency bars were found by Milton, about 140 packed close together, socket to point, giving the impression that they had been contained in a chest. Human remains were found with them. The bars aroused much curiosity and when dug up were placed in a wheelbarrow and taken to the local blacksmith who was anxious to test them by smelting some down; others were taken as curios by Mr G. Moore and the remainder disappeared. Some forty years later a rusty heap of the bars was found by Sir Walter Essex in a shed of the house (now Grey Gables) belonging to the owner of the camp in 1880.

'I can find no evidence whatsoever for two hoards in Salmonsbury.

'Mr Dunning has made a record with drawings of any bars that can still be traced, which I am sorry to say only number 40'.

¹³ I equate these with the two bars in the London Museum from 'near London'.

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MADRAS CATAMARANS

I have to thank Mr R. Jackson for drawing my attention to the need to clarify the meaning of a sentence in my paper on the 'Origins of Plank-built Boats', published in *ANTIQUITY*, March 1939. In this, after describing the sailing catamaran of Vizagapatam, I remarked that 'the more primitive type seen at Madras never sets any kind of sail'. For 'more' the word 'most' would have been preferable and subject to no misapprehension of meaning.

I should here explain that the most primitive type of catamaran used by Madras fishermen is that employed for line fishing and known as the *thundil maram* or hook-catamaran. In it all the refinements of construction and equipment common to the catamarans used by net fishermen are wanting and a sail is *never* used. In the net-fishing catamarans—the *periya maram* and the *irukka maram*—a small lateen sail is set whenever there is a favourable wind. Full details of the equipment of these superior types of sailing catamarans are given in my memoir on 'The Origins and Ethnological Significance of Indian Boat Designs', published in vol. VII of the *Memoirs of the Asiatic Society of Bengal*.

JAMES HORNELL.

A VIKING SHIP-BURIAL AT STRANRAER ?

The possibility that a Viking ship-burial may have been partially uncovered at Stranraer, probably in 1683, is suggested by the following extract from *A Large Description of Galloway*, by Andrew Symson, a Scottish Episcopal minister of the late 17th century.*

'In this town [Stranraer] the last year, while they were digging a water-gate for a mill, they lighted upon a ship, a considerable distance from the shore, unto which the sea at the highest spring-tide never comes. It was transversely under a little bourne, and wholly covered with earth a considerable depth ; for there was a good yard, with kale growing in it, upon the one end of it. By that part of it which was gotten out, my informers, who saw it, conjecture that the vessel had been pretty large ; they also tell me, that the boards were not joyn'd together, after the usual fashion of our present ships or barks, as also that it had nailes of copper'.

E. CECIL CURWEN.

* This work was compiled in 1684, completed in 1692, but not printed till 1823. It may be found in the appendix to the second volume of Mackenzie's *History of Galloway*, and in the *Geographical Collections relating to Scotland made by Walter Macfarlane*, published by the Scottish Historical Society. The extract here given is as quoted by Rev. C. H. Dick in *Highways and Byways in Galloway and Carrick* (edn. 1919), p. 294.

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THE WHITE PATINATION OF BLACK FLINT (PLATE)

The change of surface-colour to which flint is liable under certain conditions is a commonplace of archaeology. A knowledge of the nature of this change, and of the factors to which it may be due, may, however, be of great value in assessing the history of a flint implement and the possible changes of environment which it may have undergone since it was originally struck.

The writer makes no claim to have studied this subject comprehensively, but feels that it may be worth while recording certain observations and experiments that bear on the question.

In excavating the shaft of a neolithic flint-mine, as for instance on the Sussex Downs, where freshly fractured flint appears black, the rule is that the degree of patination exhibited by flakes and implements found in the filling of the shaft varies inversely with the depth at which they are found. Thus flints found in the mould overlying the chalk filling show a dense, opaque white surface, with blunt edges, and even patches of surface disintegration. An implement presenting these features can always be recognized as a surface find. Flints found in the upper part of the chalk filling show a creamy white patina, but have fairly sharp edges. The lower one goes the thinner and more translucent is the white film that covers the black flint below it, appearing first like spilt milk, and then as a mottled blue and white. At a depth of about 9 ft. this gradually gives place to a mottled blue and black, while below 15 ft., and in the galleries, the patination is so slight that it only becomes apparent on drying, and may be said to be virtually absent. It is also commonly observed that in some cases the upper surface of a flint as it lies in the chalk is patinated to a greater degree than the lower. These observations point to the fact that the patinating agency, whatever it be, descends from above, attaining its greatest concentration in the surface mould. One may infer, too, that when the relationship between degree of patination and level of find-spot is observed to hold good, all the flint implements and flakes in the shaft must be contemporary with the mining.

This white patination is a physiochemical change that affects the surface as a result of solvent action. Flint consists of an extremely fine sponge-like meshwork of chalcedony, the interstices of which are filled with opal, these minerals consisting of silica in crystalline and colloidal forms, respectively.¹ If the opal is dissolved out by a solvent,

¹ For a recent review of the nature and origin of flint see Dr K. P. Oakley's paper in *Science Progress*, xxxiv (Oct. 1939), 277.

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leaving only the meshwork of chalcedony, the latter appears white, just as foam appears white, because it is a meshwork of water containing minute air-spaces. This white patination can be produced artificially by boiling a piece of black flint in a weak solution of caustic soda; prolonged boiling goes further, and produces gross disintegration of the surface by attacking the framework of chalcedony—thus reproducing the disintegration observed in some surface flints.

Surface flints, however, that are found in mould overlying non-calcareous sub-soils, such as sand or clay, rarely show more than the feeblest trace of patination, and are as a rule virtually unpatinated. The inference from these combined observations is that whatever the actual solvent responsible for the phenomenon may be, the presence of *both* surface-mould *and* chalk (or other calcareous matter) is necessary. In other words the solvent is the product of something in the mould acting on the chalk, and this something is, according to Dr Oakley, carbonic acid in the ionized state.

Before his paper appeared I undertook a few experiments with the help of Mr D. W. Hudson, in order to determine the nature of the solvent, but without conclusive results. We did, however, obtain positive confirmation of the view put forward above that mould (or at least decaying organic matter) *plus* chalk are necessary for patination to occur.

The experiments consisted in the prolonged immersion of freshly struck flakes of black flint (from Brandon) in various solutions or suspensions at room-temperature.

Flakes were immersed in the following mixtures for a period of 1 year and 10 months:—(1) chalk and water; (2) chalk and water containing decaying grass, animal urine and garden mould. When examined and dried the first group was found to be quite unaltered, but the second exhibited well marked patination at the points of contact with the chalk,² and a slight 'bloom' over the rest of the surfaces immersed. This indicates that the solvent was given off from the chalk under the influence of something in the decaying organic matter. The thickness of the patina in this group was determined as lying between 1/200 and 1/100 millimetre (PLATE facing).

Other flakes were immersed in the following solutions for a period of 2½ years:—(3) ammonium carbonate with chalk; (4) ammonium

² And also incrustations, insoluble in hydrochloric acid, and therefore probably consisting of calcium silicate.



EXPERIMENTS IN THE PATINATION OF BLACK FLINT

- 1, 2 Unpatinated black flakes
- 3, 5 Patination produced by prolonged immersion in a suspension of chalk and decaying organic matter
 - 3 shows patch of incrustation of calcium silicate (?) at point of contact with lump of chalk
 - 4 broken across to determine depth of patination

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carbonate ; (5) calcium hydrate ; (6) ammonium hydrate. None of these showed any trace of patination.

Finally two flakes were immersed in a solution of carbon dioxide in water, under pressure in a sparklet syphon for nearly four years, with entirely negative results.

The importance of understanding the nature of patination and the factors giving rise to it lie, as has been said, in the clues it may give as to the vicissitudes through which a flint flake or implement may have been since it was first struck. Besides indicating the contemporaneity of flints in the shaft of a flint-mine or other deep excavation in the chalk, patination may give clues in some such way as the following : an abnormal degree of patination on a flint found above a sandy subsoil suggests that the specimen in question may have been brought from the chalk Downs as material for re-use ; indeed it may even show unpatinated secondary working. In such a case the flint must be supposed to have been lying on the chalk Downs long enough to acquire its patina before being collected for re-use. E. CECIL CURWEN.

THE TREASURY OF ATREUS

In our September number a reference was given to the plan of the Treasury of Atreus mentioned by Mr A. J. B. Wace in his article (pp. 233-49). We had hoped to reproduce the plan published as plate LVI in the 'Annual of the British School at Athens', xxv (pp. 504, 73 plates, 98 text-figures) which consists of the full reports of the excavations undertaken by the School at Mycenae, 1921-23. Circumstances prevented, and the deletion of the reference to the plan (page 234, line 7) was overlooked.

Reviews

MINING AND METALLURGY IN NEGRO AFRICA. By WALTER CLINE. *Menasha, Wisconsin, U.S.A. George Banta Publishing Company, 1937. pp. 155, 16 illustrations, 4 maps. \$2.00.*

Among the innumerable books which have been written upon African exploration there are to be found many accounts of the technical processes employed by the skilled craftsmen of that vast continent. The author of this book has endeavoured to assemble within its covers all accessible data upon mining and metallurgy. His task therefore was mainly a bibliographical one, but he brought to it a keen sense of ordered discrimination and technical curiosity. He has built up a useful source-book for those who wish to make more detailed studies, and, in particular, he has collected valuable material for comparison with those primitive processes of mining and metal-working in other lands, which are of such perennial interest to archaeologists.

As its title suggests, the countries of Egypt and of the Mediterranean coast lie beyond the geographical limits of the book. In passing, it is interesting to note how little the high technical and artistic culture of the Egyptian court spread to Nubia or the other countries to the south and west. It would seem that a series of military raids, with some semi-permanent occupation, to enforce a tribute of gold, slaves, and other plunder, rather than the peaceful penetration of mutual trade, represented Egypt's sole interests in these lands.

Much of Egypt's early gold came down the Upper Nile and from the land of Punt, now generally identified with the Somali coast. But it was from West Africa, the Western Sudan and the Sahara that the great bulk of medieval trade in gold proceeded: Arab, Italian and Portuguese traders were concerned in this. Much of the gold was from alluvial washings, but some shallow mining seems to have been practised. The natives valued gold principally as a means of foreign trade: copper, brass, iron, and woven fabrics were sought in exchange. In the Middle Ages there was great gold mining activity in the Transvaal and Southern Rhodesia, and a smaller amount in Central and East Africa. Silver was little known or worked.

The earliest datable iron ornaments and implements from Africa are a few predynastic ornaments and tools from Egypt, made from meteoric iron; and, much later, the wrought iron head-rest and tools from the tomb of Tutankhamen. Nothing so early as this has been found in Negro Africa, but iron remains

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associated with neolithic sites are to be found in the Niger region and from at least one site in South Africa. From the 8th century A.D. onwards the iron workings of Zimbabwe were of importance, and the trade in iron from South and East Africa eventually extended to India and the Far East.

Types of furnace employed in smelting the ore vary considerably. The author describes them in detail and gives a number of drawings of the furnaces built by different tribes. They range from a small open hearth to the great furnaces of the Western Sudan, which sometimes reach eight feet in diameter and twenty feet in height. The smelted iron from these furnaces differs much in quality: the bloom from the smaller furnaces and hearths containing a high percentage of slag and carbon, while those from the tall furnaces are of almost pure wrought iron.

The ancient copper and tin mining industry of South Africa was extensive, but there is uncertainty as to its actual antiquity. Some of the mines, however, are at least several hundred years old. Individual workings may be as much as 150 feet deep, and must have produced ore equivalent to a thousand tons of copper. The production and export across the Indian Ocean of copper, and perhaps bronze, from the Zimbabwe region may, indeed, be as old as its trade in iron. In Africa, tin mines seem only to be found in the Transvaal and in Northern Nigeria.

The author discusses the distribution of copper workings and the methods of copper smelting at length. The negroes never mined zinc or lead, so a European or Arab source must be found for all brasses. These alloys were brought to the Niger and Guinea by Arabs and Moors, and by European traders at the coast. The Moslem invasion would bring them to the Central Sudan. The well-known ornamental castings from Benin, of brass rather than bronze, may be composed of copper from the Sahara or the Southern Congo, and zinc perhaps of Iberian origin, for some of the casts contain traces of arsenic, antimony and nickel.

Casting in the open mould, rod casting and the *cire perdue* processes are discussed in turn. A characteristic feature of the West African *cire perdue* technique is that after the clay mould has been formed over the wax model a clay crucible, filled with the brass which is to be used in the casting, is luted with clay to the upper end of the mould. When thoroughly dried, the combined crucible and mould are placed in the furnace with the crucible downwards. The wax is melted out through a hole left for the purpose. The fire is increased to melt the brass, and, when the craftsman considers that fusion is complete he reverses the position of the mould, thus allowing the molten metal to flow into it. It would seem probable that the art of *cire perdue* casting was introduced to West Africa from the Sudan and that the method had its origin yet further north.

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The technique and equipment of the forge are dealt with at length ; and the varied types of drum, concertina, and bag bellows are illustrated fully. A discussion of the methods of wire-drawing, and the making of metal ribbon and of chain follows.

A long chapter on the social and religious aspects of metal working shows in how intimate a fashion the successful work of the craftsman is felt to depend upon the favour of the powers above him. The operations of the smith's craft are closely bound up with ritual inhibitions and magic.

A chapter entitled ' Speculations ' enables the author to set down a few guesses as to the routes by which the knowledge of metallurgy spread throughout the continent, and a bibliography of over 300 works, with a few maps, concludes this very useful book.

HERBERT MARYON.

NORDISK KULTUR II. *Befolkning under Medeltiden.* Utgiven af ADOLF SCHÜCK. *Stockholm, Bonnier ; Oslo, Aschehoug and Co. ; Copenhagen, Schultz, 1938. pp. 180. Kr. 7.*

This volume of *Nordisk Kultur* contains four articles—Denmark's population and settlements in the Middle Ages, by Aksel E. Christensen ; the People of Norway in the Middle Ages, by Oscar A. Johnsen ; Swedes in Finland and Esthonia, by Eirik Hornberg ; and the history of Sweden's population during the Middle Ages, by the editor of the volume.

Denmark, much more than the other Scandinavian countries, has remained an ethnic unity since prehistoric times, and in consequence of that fact Herr Christensen is able to devote much of his space to a discussion of the various strata of settlements within the country, and to show how a lightly populated, heavily wooded countryside has changed in character. From the ethnic point of view, study of modern Danish dialects is of little help, since the Danish dialects exemplify the simplest method of formation, by geographical remoteness ; and there being likewise little archaeological evidence for the period, the author relies largely upon place-names. Special note should be made at this point of the lists of place-name elements and the distribution-maps given ; they are of particular interest and value to the student of English as well as of Scandinavian place-names, since many of the Danish elements also figured in the Danelaw.

In the second part of the article we come to the question of emigration and immigration. Emigration is comparatively simply disposed of for the early Middle Ages, consisting as it did of extensive transference of population to England and other countries during the Viking Age ; at a later period it was not the emigration of communities so much as of individuals or groups—nobles, churchmen, or merchants. Immigration is more fascinating, since we learn of small ' pockets ' of settlers—Swedes in Sleswig-Holstein, Frisians, Wends,

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Germans; and it is interesting to note that the German immigrants, largely connected with trading and with the Hanseatic League, occupied in Denmark positions of importance quite disproportionate to their numbers. That last fact, along with the crushing effect of the Black Death in the middle of the fourteenth century, is a feature of all the Scandinavian countries, and is repeated in two other articles. The Black Death clearly was a catastrophe which has left the Scandinavian countries under-populated to this day.

In the earliest literature of Norway it is stated that there were then, as at present, two ethnic groups, one of tall fair people, the others short and dark, and the latter perhaps the older strain in the country. Herr Johnsen's article, like the previous one, deals with Viking emigration and with the evidence of place-names, and many features are obviously common to Denmark and to Norway. An increasing move towards the towns brought immigration, mostly of traders and clergy, and at a later date of nobles from Denmark; but again trade and population dwindled with the Black Death, and it was only with the increasing importance of the timber trade that Norway slowly began to recover.

Herr Schück's approach to his study of Sweden is necessarily different from those of the other writers. To begin with, Sweden was not an ethnic unity such as Denmark, nor a political one as Norway was *in posse*, if not *in esse*. Accordingly the author is pre-occupied with the ancient territorial divisions of what is now Sweden, and with the need for the identification of the races which occupied that territory. With Swedes and Geats, then, and the extent of their lands, the main part of the article deals. Where such a type of discussion bulks so largely, it is unfortunate that Herr Schück has chosen to adopt the view that the Geats and the Jutes were identical—a view much out of favour among linguistic scholars.

The article on Swedish settlement in Finland and Esthonia has an interest of its own. The main point about this colonizing is that it was essentially popular in its nature; the colonists were peasants, farmers, and woodmen, and the land on which they had settled had previously been waste. The majority of the settlers came from Norrland, and settled in the south and southwest of Finland, and on the islands and coast of Esthonia. By about A.D. 1560 the number of Swedish settlers in Finland amounted to about 250,000; in Esthonia by the end of the 17th century there were 12,000 Swedes. In the latter case, however, the settlers merged with the Esthonian colonies.

One personal grumble. The writers attempt to form estimates about the population of the various Scandinavian countries, based on certain medieval documents—tax rolls and the like—while admitting that the results they give may be quite misleading. Still they continue to give those results, and to base theories upon them. Surely this is special pleading? ANGUS MACDONALD.

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SAINT NINIAN AND THE ORIGINS OF THE CHRISTIAN CHURCH
IN SCOTLAND. By W. DOUGLAS SIMPSON. *Oliver and Boyd*, 1940.
pp. 112, 15 *plates and 2 maps.* 10s.

This well written, well printed and well illustrated book follows the lines of the former works of Dr Simpson: *The Historical Saint Columba* and *The Celtic Church in Scotland*, which are known to the readers of ANTIQUITY from the reviews in vol. II, 372-5, and vol. IX, 492-4. St. Ninian is 'the first recorded Apostle of the country we now call Scotland', known principally through a few lines in the Ecclesiastical History of Bede who refers to him side by side with St. Columba, assigning to the latter the conversion of the northern, to the much earlier Ninian that of the southern, Picts. The eighth-century poem on the saint (see my article ANTIQUITY, XIV, 280) was not known to the author; so, besides Bede, he had to use the doubtful 'Life' which Ailred of Rievaulx composed in the twelfth century, a few other even more doubtful late traditions and such further information as might be gained from the interpretation of church dedications and archaeological evidence. He relies upon Ailred's tale of Ninian's relations with St. Martin of Tours (which, judging from the silence of the poem, must now be considered worthless); so he accepts, like many predecessors, the year of Martin's death, 397, as the one fixed date of Ninian's life (the 'sixteen years' given on p. 63 from Sulpicius Severus conflict with this date), and on this shaky foundation he attempts 'to reconstruct the historical background and to assess the achievement of St. Ninian'. He emphasizes the Roman influences in this borderland of Western civilization, the outlines of which in state and church he tries to connect with the life of his hero; there are many suggestive conjectures and possibilities, though not much can be said about Ninian himself, of course on account of lack of sources.

The chapter also on Ninian's missionary achievement is in my opinion more suggestive than convincing. Bede's mention of the 'southern' Picts can hardly be made to refer to northern Scotland beyond the Mounth, nor do I see how his story of Ninian, who lived so many centuries before, should be more trustworthy than his account of St. Columba who was so much nearer to his times, and whose monastery was no less in touch with Northumbria (see Bede, *Hist. eccl.* v, 15), than Ninian's Candida Casa under Northumbrian rule; sources of so legendary a character as St. Kentigern's 'Life' have very little weight in comparison with Bede, though some exaggeration in the words of the latter on Iona may be conceded. Anyone acquainted with the extensive Continental research-work of recent years on church dedications will not be much inclined to trust conclusions which are drawn from them as to the life and work of the patron saint, his burial-place excepted. We need to consider how many possibilities of the origins of these dedications may have existed during the Dark Ages, not to speak of

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linguistic difficulties which are here I think underrated. Bede and the eighth-century poem mentioned above show that Ninian was regarded as a saint in these times also. Consider for instance the influence of old Melrose; or could not early churches dedicated to Ninian, to mention another possibility, have been founded by a Christian Pictish king like Naiton (706-732): we know his relations with Abbot Ceolfrid of Wearmouth and Jarrow, whom he asked to send him architects, 'qui iuxta morem Romanorum ecclesiam de lapide in gente ipsius facerent', to be dedicated to St. Peter (Bede, *Hist. eccl.* v, 21)? *Ignorabimus*. Names such as St. Ninian's Den, St. Ninian's Well, St. Ninian's Field in the immediate vicinity of a Ninian church (pp. 99 f., 102) prove nothing as to the origin of the foundation; they are no doubt derived from the church's patronage. Many conclusions of the author seem to me therefore unwarranted, and too many possibilities are disregarded in favour of his hero, though the book is well worth reading for its suggestions.

A few details: in which early source is King Tudwall 'recorded to have been baptised by St. Ninian' (p. 20)? The poem and Ailred regard him as Christian, though a sinner. The name of the king of the Alemanni mentioned on p. 34 was Crocus, not Erocus (see e. g. Krusch's second edition of Gregory of Tours, *Mon. Germ. hist., Scriptores rer. Merov.* i, 1, fasc. 1, Hanover 1937, p. 24, n. 4). In the two maps at the end of the volume the name of Brampton (pp. 82 ff.) should have been supplied.¹

W. LEVISON.

ÉTUDES BYZANTINES D'HISTOIRE ÉCONOMIQUE ET SOCIALE.

University of Jassy Studies in General History, no. iv. By G. I. BRĂȚIANU. Paris, Librairie orientaliste Paul Geuthner, 1938.² pp. 294 and 20 plates. 50 francs.

This volume collects articles by Brătianu, all in French, from many, often rather inaccessible, places. In time they range from the first centuries of the Christian era (with a glance or two even to classical Greece), through the whole Byzantine period down to the Ottoman régime in Constantinople and the 'Principalities', and the Russia of Catherine. The threads which hold them together are the interdependence of fluctuations in gold values and industrial prosperity, and the secular struggle between state control and private enterprise

¹ I use the opportunity of making a few additions to my article mentioned above. Page 281, line 5: after 803 there seems to have been at least one bishop of Whithorn more in the early ninth century; see K. Sisam, *Cynewulf and his poetry*, in *Proceedings of the British Academy*, 1932, xviii, 326, n. 10; P. H. Blair, *Symeon's History of the Kings*, in *Archaeologia Aeliana*, 1939, 4th series, xvi, 97. Page 288, note 13: see also Watson, *Notes on St. Ninian*, in *The Evangelical Quarterly* 1933, v, 22. Page 289, note 16: On *plebs* see also Hugh Williams, *Christianity in Early Britain*, Oxford, 1912, pp. 289 ff.

² Not received by *ANTIQUITY* until April, 1939.

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in the eastern Mediterranean. The work is valuable as giving to Western historians an *aperçu* of the very different conditions prevailing in the East, knowledge which is important to them not least because the 'Besant' was for centuries the standard gold coin of Europe, and which cannot easily be acquired without acquaintance with publications in out-of-the-way places and languages. And it is interesting too, to be reminded that serfdom developed on a large scale in eastern Europe just as it disappeared in the West. Brătianu suggests reasons, different for each country, and tilts at doctrinaire materialists' interpretations.

The author is evidently a historian who has 'got up' his economics, and though he has done this well enough, the work is not free from the vagueness which afflicts so many studies of pre-modern economic history. When he has 'got up' his history too, as in the early chapters he evidently has (all ancient references are confessedly second-hand), his work has a rather 'half-baked' air, and there are some disputable statements; these chapters might really have been omitted. He is in fact at his best when he stays most closely to the primary sources as in a rehabilitation of Nicephorus, an 'orthodox' treasury official turned emperor.

Many of the chapters draw attention to an important point of Levantine history. The existence of a disproportionately large capital city, and the obligations of feeding it, forced the government into measures of state control, and the author describes incidents in the battle between the state and private interests, whether feudal *δυνατοί* or foreign industrialists. The battle was lost for Byzantium, to be taken up victoriously again by Mahomet II and the Ottomans. Their Black Sea grain fleet is strongly reminiscent of late Roman *navicularii*.

Most of the plates, giving delightful scenes of agricultural life from Byzantine manuscripts are, alas, quite irrelevant to the text; the last three, however, illustrate an article in rather lighter vein, showing the far eastern origin of medieval Byzantine (and western European) costume. C. E. STEVENS.

SARN HELEN : a Roman Road in Wales. By MORRIS MARPLES. *The Welsh Outlook Press, Newtown, Montgomeryshire, 1939. pp. 45, nine text-maps. 2s 6d.*

The Welsh Outlook Press has long shown an interest in the Roman roads of Wales. They form a neglected subject upon which much time and labour might profitably be spent. But the series of publications which have so far been issued by the Press cannot be said to serve usefully the cause to which they are devoted. Their introductory remarks quote the wise words of Haverfield only to neglect them; for there has been little or no sign that any of Mr O'Dwyer's county surveys has the essential *practical* basis of field-work which

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Haverfield demanded—indeed, it is doubtful whether their author is entirely familiar with even the more obvious characteristics of the roads of any period !

Mr Marples' little book marks an advance on the county series. He has chosen the one road (or series of roads) to which the name 'Sarn Helen' has been applied ; and he has followed most of it from Caerhŷn in the north to Neath in the south. Here at least there has been an attempt to make contact with the problems on the spot, which has been backed by reference to earlier writers, to whom Mr Marples has gone for the hints that only they can give, who saw the roads before enclosure, intensive agriculture and industrialization had effaced or buried them in many parts of the country.

For this much we can be grateful. But when our writer says that much remains to be done we can only agree with him. For the fact is that the essential work remains to be done. Mr Marples should now discard the one-inch map and the Ordnance Survey identifications, and get down to detail on the six-inch scale. His possibilities and their alternatives need to be followed up, not by walking between the hedges of modern metalled roads, but by getting outside them to examine the problems to which he himself draws attention, and especially to explore those very un-Roman kinks which are a feature of the difficult mid-Wales portion. This will be to convert pleasant walking into something resembling hard (and much of it almost certainly unproductive) work. But until someone will face up to this necessity, knowledge of 'Sarn Helen' and the other Roman roads of Wales will remain in its present unsatisfactory state.

W. F. GRIMES.

THE WELSH HOUSE : a study in Folk Culture. By IORWERTH C. PEATE.

Being volume XLVII of *Y Cymmrodor*, the Journal of the Honourable Society of Cymmrodorion, 20 Bedford Square, London. 1940. pp. XVIII, 234 and 87 plates, 58 text-figures. 15s.

This lavishly illustrated book has been awaited by an increasing body of persons interested in the peasant cultures of Britain and their expression in building construction. The record of our farm layouts and farmhouses, of our cottages and crofts, dating from times when local traditions and local materials governed construction, is woefully inadequate. In this respect we lag far behind continental countries, though our material is, or was within living memory, ample enough. The lack of applied scholarship and University interest in these matters is deadening ; the writer of a well-illustrated book on the 'Cottages of England' for example seems to regard any manor house or yeoman's house which has come down in the world as falling within this category. In his notice of the Westmorland volume of the Royal Commission on Ancient Monuments three years ago, the present reviewer remarked that there was

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nothing to indicate that the importance of farm layouts as illustrating economic and cultural connexions, was or ever had been appreciated by the Commission, (though the scrappiest monastic layout was faithfully studied and recorded). Here, then, is the background to Mr Peate's book.

His introduction to the volume contains many sound comments on the general position; his approach and his intention may be gauged from one sentence. 'In such a country as Wales, incorporated since 1536 in a neighbouring virile state, the only national architecture is peasant architecture'. As an Englishman who has tried to familiarize himself with all types of architecture in Wales, of peer, squire, townsman and peasant, I think this is broadly true. But Mr Peate perhaps does not realize with what passionate zeal the English landowner has, generation after generation, himself gone overseas to less virile lands for architectural inspiration!

The first chapter in the author's book properly stresses the importance of the lithology of Wales, of her position in the Highland Zone of Britain, and of the geographically-enforced isolation of her communities, in any study of her architecture. He then deals with the circular house as revealed by excavation, and the later history of round houses; the 'ink-bottle house' of squatter districts and the still-surviving round pigsty are well worthy of notice. The pig, says the author, is the only domestic animal who could comfortably be accommodated in the beehive hut of early man; indeed it is peculiarly suitable for him. Having chased (or been chased by) a large specimen round and round the sty figured in Mr Peate's plate 4, the reviewer can only agree; with this reservation, that the accommodation is inadequate for both species together.

The next chapter deals with the rectangular house, but why does the author not survey the history of the type in Wales as he did with the round house? The deep impression made by the Roman house on the native consciousness is shown, e.g. at the palace (?) of Din Lligwy in Anglesey, and persistence of the type into the Dark Ages at Pant-y-saer in the same county. The first type of rectangular house here studied, then, is the Long House*—a central-chimneyed type in which man and his cattle are accommodated under one roof, with a passage leading from kitchen to cow-stalls and with entry to the dwelling-half by way of the cattle-feeding-walk only. The building may be anything up to 90 feet in length. In an interesting series of photographs and ground-plans variations of the type are indicated, and the range in Wales of this moorland house is discussed. The author pays tribute to the exhaustive study given to a number of these houses forty years ago by the Royal Commission on Land in Wales, chiefly through the insight of the late Sir David Lleufer Thomas, to whom the book is dedicated. The one- and two-roomed cottage next claim

* For Mr Peate's article see ANTIQUITY 1936, XI, 448-59. EDITOR.

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attention, particularly the latter, with its 'croglofft', a half-loft over the bedroom reached from the kitchen by a movable ladder. In West Wales and Anglesey the type is dominant, for in many parts one may see dozens, possibly hundreds in a day's walk; it is comparatively rare elsewhere in the Principality. This is due, says Mr Peate, to more extensive rebuilding and replacement in certain counties than in others (p. 112), but the reviewer, who published a different view, is not yet convinced that the intensity of the coastal distribution can thus be explained away.

In a chapter entitled 'Some stone and half timbered houses' Mr Peate first illustrates from Romilly Allen's paper the remarkable series of stone farm-houses in Pembrokeshire. He argues that the type they represent is basilical, and derived from the wooden house, probably correctly; but one cannot let the suggestion (p. 168) pass that this conclusion in any way challenges that arrived at by Allen. 'The most remarkable feature in the construction of the houses, writes Allen, 'is the device adopted for increasing the area of the ground floor without the necessity of making a roof of unduly wide span. This is done by adding what may be termed side aisles'. This is, surely, an accurate description of the ideas that lie behind basilical construction.

In dealing with the half-timbered house, Mr Peate's practice does not accord with his admirable principles. The peasant and the 'Study in Folk Culture' seems to be forgotten; he refers to town houses and houses obviously of the gentry and aristocracy, and even devotes half a dozen of his allotment of illustrations, precious for his proper purposes, to such. He could easily have maintained the unity of outlook of the book by studying and illustrating the manifestations of half-timber technique in Welsh farmhouses and cottages only.

The most important achievements in the book are the insistence on the interest and significance of the Long House, and on the 'cruck' roof construction as a Highland Zone technique, widespread in Wales from an early date. The reviewer is disposed to revise his ideas on the character of the roofs described in the Welsh Laws after reading Mr Peate's learned interpretation of the literary evidence; crucks, not central posts, seem to have been the supports described. But having effectively presented this latter proposition he supports it by introducing a series of illustrations of a house described in *Archaeologia Cambrensis* many years ago, which is stated to have roof principals springing 'direct from the ground'—crucks in the original account—but which, in the example which can be checked, manifestly has nothing of the sort, but a crazy array of supports including central posts. Of the persons who prepared figs. 32 and 35, reproduced by Mr Peate, one was inventing. Whether our criticism be correct or no, something needs explaining, and the failure to attempt this suggests insensitiveness to the practical aspects of construction. The Long Houses, moreover,

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are of the greatest importance ; but none of the fourteen illustrations to the chapter thereon have a proper scale, they do not differentiate between original and later work, and there are no drawings illustrating the construction of these buildings. Again, in a constructional matter the author misquotes his authority, Harold Hughes, an accomplished antiquary and architect, describing as a three-piece truss-construction what Hughes records as a two-piece (p. 189). He should have recognized the sort of principal Hughes had in mind, for there are eight complete trusses of the type at Maes-y-Bidiau in Carmarthenshire, illustrated in his book (plate 25).

Why is this ? Let us turn to the contents table of the book : Introduction, Building Material, House Types, last of all, Building Construction. Here lies the explanation : Mr Peate's cart is in front of his horse. In the chapter on Construction, moreover, the subject is treated perfunctorily. There are many roof types, but the only one dealt with is the cruck ; and its devolution is, Mr Peate says, ' a story with which we are not concerned ' (p. 189). But those who are interested in the ' Welsh House ' cannot help being concerned with such details. They are overwhelmingly important in a peasant country where simplicity and absence of ornament make the dating of buildings difficult. And as these changes in the cruck roof seem to have started not later than 1600, they are potentially relevant to the study of nine out of ten buildings one comes across in Wales.

The criticisms in this review are penned in no carping spirit. Mr Peate has set his hand to a task of urgent and vital importance, for which he has important qualifications. He is the pioneer in the study, on a fully national basis, of folk culture as expressed in Welsh houses. Construction—its exact record and description—as well as planning, represents the grammar of the new language he is teaching us—the tongue in which the folk buildings of Wales tell their story. We cannot profit by an advanced course until all the elements are grasped.

CYRIL FOX.

DIE BRONZEZEIT IN NORDMAINISCHEN HESSEN. By FR. HOLSTE. Vorgeschichtliche Forschungen, Heft 12. Berlin : Walter de Gruyter & Co. 1939. pp. 196, 35 plates (including 8 maps). RM. 14.

In his introduction the author points out that in recent years research on the Bronze Age of southern Germany has not advanced to any considerable extent, and that this culture-phase labours under the disadvantage of a vague generalized conception of its geographical limits. It has been usual to speak of a ' South German Bronze Age ' or the ' Bronze Age of the zone north of the Alps ', and allowances have not been made for regional differences in the large

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area included under these descriptions. This monograph is intended to supply the want in respect of one of the component areas. In general the author does not confine himself to arbitrary administrative boundaries but rather discusses an area which may be described briefly as the 'Zone north of the Main'. This course may be regarded as justifiable because present-day geographical divisions in any country differ notoriously from natural regions and may have no significance in the study of prehistoric distributions. Nevertheless, in the study of a set locality, some indication should be given of the bounds which the worker has set himself, and for the benefit of the reader not thoroughly acquainted with German topography the failure to delimit the area under consideration on a map is a lack in this volume. The author shows the distribution of the various types on a series of maps some of which cover most of the Rhine valley, the plan being to trace the area of distribution of most of the important bronze types found in Hesse. The inventory of finds given as an appendix indicates the area with which the author is primarily concerned. The finds listed come from the administrative districts (*Regierungsbezirke*) of Wiesbaden and Kassel, while those of Oberhessen are omitted as being already available in Kunkel's *Oberhessens Vorgeschichtliche Altertümer*.

The book opens with a general consideration of the evidences of settlement in Bronze Age times in relation to the natural features, and it is noted that settlement in general is found not on the löss of the plains and river valleys, but on the (today) forest-covered heights. Water supply was of evident importance and, in the absence of the relevant pollen-analytical research, the author inclines to the theory that this was so because of the warm optimum which caused the inhabitants to seek the surer supply near the sources of the streams rather than that of the lower valleys. Unfortunately, evidence of settlement derives mainly from burials, habitation-sites of the period being almost entirely lacking. Hence the chief portion of Fr. Holste's thesis concerns itself with burials. Almost all the burials are in tumuli, but beyond this fact, considerable variety of burial-rite is manifest. In eastern Hesse stone kerbs and inner stone-settings are noted while in the western region these are extremely rare. Cremations are very exceptional. The urnfield culture is not included in the survey, the author following Reinecke in excluding this phase from the Bronze Age.

The Early Bronze Age is not well represented and is briefly dealt with. It is a weak culture phase, having connexions with the Aunjetitz area. The finds from the developed Bronze Age are dealt with in four sections: types from men's graves, those from women's graves, objects of utility and pottery. Chapters follow on the general aspect and origin of the Hesse groups and on chronology. The various types are dealt with in some detail, from the viewpoint of typology and distribution, and the maps provide welcome additions and corrections to

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the now very much out of date *Typenkartenbericht der Deutschen Anthropologischen Gesellschaft* (*Zeit. Ethn.* 36, 1904).

The principal conclusion forthcoming from the study of the Bronze Age in Hesse (or rather of the tumulus culture in Hesse) is that the area under consideration may be divided into two cultural regions: west and east. The former region is closely connected with the Middle Rhine, while the latter is a more uniform and independent culture, having, however, connexions with northwest Germany. Here again a lack is a map showing the extent of these two cultural regions.

In the discussion on chronology the author deals with various schemes of Bronze Age chronology and then provides a two-fold division of the Hesse material on the basis of the grave goods.

The book is well documented and deals with much hitherto unpublished material. One would wish for more and better illustrations of the grave structures. It provides a useful addition to the literature of the German Bronze Age.
S.P.ÖR.

THE MAKING OF EGYPT. By SIR FLINDERS PETRIE. *The Sheldon Press.*
pp. xv, 188, *including 82 plates.* 12s 6d.

This book aims at delineating the various racial elements that from pre-dynastic times onwards united in the people of Egypt and produced its epochs of greatness. Speculation about origins is always a fascinating occupation, and the opinion of one who in a life-time has achieved more than anyone else in the service of Egyptology is to be given full consideration. We welcome therefore another work from the pen of the Grand Old Man of Egyptology, even if some of the views in it appear to the ordinary mortal to be Olympian and difficult to grasp.

Is it certain that the material and cultural progress of a people can be correlated with their physical make-up? To some extent there must be a relation. No doubt there was negro as well as Mediterranean blood in more than one of the great historic dynasties of Egypt. In the Sudan, where this review is written, there are many varying blends of the Mediterranean race with the negro, besides pure examples of both races. One outstanding characteristic of the negro is his readiness to adopt the outward forms of foreign culture, combined with an apparently contradictory quality, whether conservatism, lack of initiative or something else, which lead to the retention of institutions once adopted and their unintelligent repetition for centuries. Pure examples of the Mediterranean race, whose ancestors have taken to the nomadic life, seem to be equally conservative and less adaptive, such is their traditional pride in their way of living. It is those blends of the two races which show the greatest

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proportion of the Mediterranean race in their make-up that appear to have the greatest mental powers and so to be most capable of progress.

It is contact between races and cultures that is especially responsible for progress. Isolation spells stagnation. It goes almost without saying that many must have been the contacts between peoples responsible for the great periods of Egyptian history and culture. Sir Flinders Petrie himself has done more than anyone else to make those contacts clear to us, and he would be the first to recognize that much more work remains to be done by those that come after him, before all the details of the picture can be clearly seen.

In this book he draws particular attention to the value of clues to be derived from the recognition of racial portraits. We may not always agree with him—(to the reviewer the types given on plate LXIII, for example, do not appear to be peculiar to the Galla)—but we cannot fail to be stimulated by his youthful originality of outlook.

A. J. ARKELL.

PREHISTORY. By A. VAYSON DE PRADENNE, *translated by* ERNEST F. ROW.

London : Harrap, 1940. pp. 240. 6s.

We should be grateful to the publishers and to the translator for this readable English version of our late French colleague's introductory text-book of prehistory. In small compass and at a moderate price the book gives a beginner an admirable conspectus of the aims, methods and outstanding results of this branch of archaeology as viewed by the ablest exponent of the classical French school. Its appearance reminds us of what a loss our science sustained in the premature death of this promising exponent.

The book is divided into three parts, really devoted respectively to methods in general, the culture-sequence in Western Europe taken as a standard, and results in other areas. By the definitions laid down in chapter I the subject is circumscribed by consigning to proto-history the Bronze and Early Iron Ages which in Britain and generally outside France are regarded as important divisions of prehistory. The second chapter gives a generalized account of the nature of the geological, archaeological, palaeontological and anthropological evidence, including an instructive diagram illustrating three possible theories of the relation of *Pithecanthropos* to the anthropoids and man respectively. A chapter on the search for documents contains illustrated explanations of solifluxion and of the formation of river terraces, hints on how to excavate a cave, remarks on 'pit-dwellings', shell-mounds and lake-dwellings and a compact synopsis of the genesis and growth of frauds based on the author's well-known study. The chapter on technology which concludes part I is devoted mainly to flint work.

Part II begins with a brief history of prehistory, doing full justice to Plott,

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Frere and Geikie. In the next chapter under the heading, 'geological classifications', glacial phenomena are explained with illustrations, and the systems of Geikie, Penck and Bruckner, and Déperet are expounded. The archaeological classification is that of de Mortillet, enlarged, of course to contain the Aurignacian in its three subdivisions, the Maglemosean, Vouga's subdivisions of the 'lake-dwelling neolithic' and Montelius' 'Nordic neolithic' series. A particularly valuable feature is the relative prominence given to the Stone Ages in the Far East, Central and South Africa as well as the Near East, since these areas are too often entirely ignored by English writers.

The whole book is surprisingly conservative, and the outlook essentially evolutionistic and anti-historical. Clactonian and Levalloisian are just mentioned, but Breuil's views on the relations of core-tools and flake-tools are rejected. We are instead warned against 'unwarranted simplifications from which is formed an armchair science whose conclusions are both complicated and uncertain'. So the subdivisions of the Aurignacian are left as stages; Peyrony's terminology is just mentioned, but not that of Garrod, still less its implications. The concept of cultures and culture-cycles is not even alluded to so no account of neolithic cultures is to be expected; the Nordic neolithic is in fact represented by the megalithic culture to the exclusion of separate graves and dwelling-places. Some statements are not only conservative but absolutely out of date. It is implied that all Upper Palaeolithic races in Europe were dolichocephalic. The culture-sequence given for Mesopotamia omits the important Uruk phase. The figure entitled 'neolithic industries of the Fayum', includes dynastic types. The 'tranchet' illustrated among the 'double-sided pieces' in fig. 10 is a core-axe sharpened by a *tranchet*-blow, not a typical *grand tranchet* at all. The translator is not always successful in dealing with technical terms; he has invented 'terranes', 'pollinic spectrum', 'double-side' (for *biface*), and used nipple for lug, rim for rib, covered ways for covered galleries, gull's wing blade for side-blow flake, throwing-stick for spear-thrower. Alfontova, Gaggarino and Ben Alter are nasty misprints. V. GORDON CHILDE.

DAS WIEDERERSTANDENE ASSUR. By WALTHER ANDRAE. Leipzig : J. C. Hinrichs, 1938. pp. 232. Paper 14 RM., cloth 16 RM.

The account of eleven years' excavations on the site of the ancient metropolis of the Assyrians is a landmark in Near Eastern archaeology in several respects. It is one which points backwards, rather than forward, since the excavations it describes took place before the outbreak of the war in 1914. It pays a tribute by its title ('Ashur Resurrected', or the like) to another famous book *Das Wiederstandene Babylon*, in which Robert Koldewey several years ago summed up and described his spectacular excavations at the site of Babylon.

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The important site of Ashur, now Kala'at-Shergat, it should be explained, is no discovery of recent years. As it lies on the main road from Mosul to Baghdad it would be hard to miss. Layard, the father of Assyriology, had noticed it, but his preoccupation with Nineveh and Nimrud in 1848-9 caused him to deny it his personal attention. It was excavated for him by his friend and representative, Hormuzd Rassam, a native Christian from Mosul and the brother of the British Consul there. The work was badly done and gave us little information of the variety of material which the mound contained. Our knowledge of Assyriology, meanwhile, remained mainly restricted to the later Assyrian empire of the 9th to 7th centuries B.C., as disclosed at Nineveh and Nimrud. At last, in 1903, the German Oriental Society, which had been excavating Babylon, but had found there also material mainly of a late period, felt the need of throwing more light on the older phases of Mesopotamian history. Ashur was chosen for the purpose, and was thought to deserve fresh excavation under more careful supervision than it had had at Rassam's hands. The excavators pursued their work annually with zeal and patience until interrupted by the war in 1914, and probed the citadel with trenches from end to end.

Their industry was suitably rewarded. Particularly in the quarter nearest to the river bank, remains of stately and important buildings were unearthed—great temples of the principal deities, Ishtar, Ellil, Anu and Adad, Ashur, Sin, Shamash and others, a Ziggurat, sundry palaces and royal and private tombs. Of these buildings the oldest was the temple of the goddess Ishtar, which in its first form carried the history of the city back to the beginning of the 3rd millennium B.C. Others were the work of kings of the 2nd and 1st millennium B.C., of whom in some cases we possess few other records. Numerous cuneiform texts of importance came to light and there were many interesting small finds. Amongst those which have hitherto received little notice, we may mention a beautiful figured alabaster vase with a design of a tree of life and handles in the form of lions (pl. 12), and a water-trough of the time of Sennacherib carved with figures of the God Ea and priestly ministrants (pl. 2).

Accounts of these discoveries appeared from time to time as the work went on. They were of two sorts—brief annual reports or large and detailed publications of isolated portions of the work. Neither were much help to general readers, the first because of their studied vagueness, the second because of their excessive detail. This deficiency is now made good.

In the planning of this book Dr Andrae addressed himself gallantly to the all too familiar difficulty—that of presenting the varied material in a scholarly way, yet one which would be understood by a non-specialist. He realized that for such a person ground plans and mere stumps of walls have not much meaning. Accordingly he divided his book into two parts. To the second, which contains

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the archaeological description of the site, he prefaces an introductory portion in a lighter vein. In an imaginative scene reminiscent of that one-time classic Becker's Gallus, he introduces us to an Ionian mercenary of the 7th century B.C., one of many who could have come from Greece to Ashur at the time of its greatest splendour. All that there was then for the stranger to see as made known to us by these discoveries is described, and we are made to follow it through the stranger's eyes. In this pleasurable journey of the mind we have the help of very many views and sketches showing the buildings as reconstructed by the able pen of Andrae himself.

In spite, therefore, of an at times slightly forbidding scientific austerity which still remains, Dr Andrae's book will be indispensable, so long as archaeology is studied. It will also stand as a monument of German former excellence in the arts of peace. By the fruitful and devoted labour of Andrae and his colleagues the dead city of Ashur was again conjured up and took shape in human minds; and it may be thought fortunate that the time sufficed for that majestic spectacle to be worthily and exactly noted and portrayed before the vision and the excavator's efforts crumble back again into shapeless dust in the turmoil and distraction of yet another collapsing world.

R. D. BARNETT.

ROMAN PORTRAITS. With a foreword by L. GOLDSCHIEDER. *Phaidon Edition. George Allen and Unwin, 1940. pp. 14 with 120 plates. 10s 6d.*

The 120 full-page plates of this volume give a selected series of Roman portraits covering the five centuries from the end of the Republic to the fall of the Western Empire. 'Roman' is interpreted to mean the art of the capital, for with one or two exceptions the provincial popular art referred to in the chronological survey is not illustrated. The scale of the book (large quarto) allows reproduction of the heads at approximately life-size, and the excellent photographs make it possible to study technical and other details as well as the general appearance of the sculpture. The title is misleading, as the choice is practically confined to free-sculptured heads in stone or bronze, with a few (and those late) from reliefs. While the exclusion of portraits on medallions, coins and gems is understandable in view of the difference between the two arts, the omission of any portraits from Imperial and other monuments is difficult to explain. Examples such as the head of Augustus from the Ara Pacis (or if this be thought too damaged one of the members of the Imperial Group) and the Severan reliefs of the Porta Argentariorum, would have been invaluable for comparison with the heads in the round which are so well illustrated. Neither the introduction, nor the brief chronological survey, attempt to discuss the plates. The former sketches the general trends in the development of Roman portraiture. The use of the adjective Flavian (p. 13, =69-117 and plates =54-117) does not

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inspire confidence in the survey, which is unnecessarily brief and misleading. The full notices in the English press recording the inauguration of the restored Ara Pacis Augustae on the banks of the Tiber in September 1938 should have saved the statement 'vestiges of which have been assembled in the Museo delle Terme'.

C. A. R. RADFORD.

GUIDE TO THE COLLECTION ILLUSTRATING THE PREHISTORY OF WALES. By W. F. GRIMES. *Cardiff*, 1939. (National Museum of Wales and University of Wales Press Board). *pp.* xv, 254 *with* 78 *figures*, 9 *plates*. 4s.

Sir Cyril Fox, Director of the National Museum of Wales, sketches in his preface to this volume the history and growth of the Collection here catalogued. He explains how 'generous gifts and long loans from public and private sources, and purchases of original specimens, have been supplemented by the acquisition of electrotypes of precious relics from Wales possessed by the older museums of Britain', so that now the Collection is representative of the life of Man in Wales from the earliest times to the Roman conquest. Under the sure guidance of the Director a stage has now been reached when a comprehensive catalogue is not only justified, but an actual necessity. The task has been entrusted to Mr W. F. Grimes, formerly Assistant-Keeper of the Department of Archaeology in the Museum. The catalogue includes all material housed in the Museum down to the end of 1937.

The production of such a Guide is never an easy piece of work. Its difficulties are increased in the case of a relatively recent collection like that of the National Museum, which has been gathered together more or less by chance, and for which the results of systematic research have only become available within comparatively recent years. Any such Guide must fulfil three essential functions. First, the layman needs an easily readable and easily intelligible introduction to the exhibits in which the cultural development of the region is treated in close geographical connexion with the sciences kindred to prehistory. Secondly, the specialist looks for a thorough handling of the material and the various problems involved, covering the results of the most recent research. Both these demands naturally entail a range of knowledge on the part of the compiler which cannot be confined to the specific Collection in question. Thirdly, such a Guide must form not only a reference-book for the use of visitors to the Museum, but must also meet the needs of those scholars who use the material of the Collection in their research but have no immediate access to it. Mr Grimes shows in the arrangement of his work that he is fully conscious of these three fundamental points, and his admirable production should serve as a model of its kind. Besides his natural gift for clear exposition he has the skill of a talented draughtsman, so that original diagrams, clear plans, and exact copies of

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the material illustrate the Guide in a manner that is all his own ; drawings such as (e.g.) fig. 26 (types of Bronze Age moulds) will gain a place in all hand-books. Figures from earlier publications are used only to a limited extent. The plates include also some good and carefully-chosen examples of monuments and landscapes, which help to avoid that monotony which can so easily attach to the mere accumulation of finds.

Part I (pp. 1-128) is in effect a handbook to the prehistory of Wales. The specialist will find in it an exhaustive account of the subject in its manifold relations with England, Scotland, Ireland and Western Europe ; the discussion naturally ranges far beyond the scope of the Museum collection. There is not only much that is new, but clear evidence is afforded of the advances made since Wheeler's *Prehistoric and Roman Wales* was published in 1925. On the other hand, it becomes obvious what great tasks still await those engaged in the archaeology of settlement-sites, and how far we still lack a really living picture of cultural-historical development. It is remarkable, though not the fault of Mr Grimes, that no single ground-plan of a house is available, much less a plan of an excavated settlement.

Part II, the Catalogue (pp. 129-202), satisfies all the basic principles of a Museum inventory, with the necessary evidence for *Quellenwerk*. Here the individual treatment of the contents of the Museum supplements the historical account given in Part I. A general Bibliography is appended, while the special literature relating to the finds is mentioned under the appropriate entries in the Catalogue. There is a topographical index arranged by counties, which presents certain difficulties to those not familiar with the geography of Wales—one would have preferred a comprehensive alphabetical index with the name of the county added after the place-names. The subject-index, like the topographical index, includes references to the illustrations also ; it is well arranged and most useful. It would have been helpful if a map of Wales had been added. Large-scale maps are obviously lacking because they are to be found in another of the Museum's publications, Sir Cyril Fox's *The Personality of Britain*. In view of the excellent arrangement of the material in the Museum, a plan in illustration of it would also have been of advantage. The book is admirably produced, and Mr Grimes and the Museum alike may well be proud of it.

G. BERSU.*

* Translated by R. G. Austin.

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